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POSTAL INJUSTICE TO PERIODICALS.

AMONG the features in the War Revenue Law that clamor for repeal by Congress the absolutely unfair postal rates affecting second-class matter take a leading place. This section of the act prescribes increases ranging from 50 to 900 per cent, and is at once unjust, impractical, and unwise.

It is unjust to the publisher, because it represents double taxation of a business that merits government assistance rather than discouragement. Publishing houses, like all other business firms, are subject to income and excess profits taxes; to documentary stamp taxes, and to taxes on insurance, transportation and communications by wire, radio and first-class mail.

The excessive and burdensome second-class rates, however, effective after July 1, 1918, are practically excise taxes, and publishers, in the knowledge that the press is the right hand of civilization, cannot cheerfully acquiesce in having their products classed among luxuries and unessentials. It is unjust to the reader because it penalizes the dissemination of intelligence, and most where the need is greatest—in remote districts where periodicals often constitute the chief form of education.

The new rates are unfair because they discriminate against publishers as a class. Either there should be uniform rates for every class of mail regardless of destination, or else all classes should be placed on the zone system. Were publishers to shift the burden of the prescribed periodical rates to the reader by increasing subscription prices, as it seems they must, the zone system would work a great injustice to the people of the Western States at long distances from the great publishing centers of the East, notably New York, and the reading habit would be greatly curtailed. Rival papers published beyond the second zone would be placed at a distinct disadvantage in respect to circulation in any given locality. Were the burden shifted to advertisers by advancing space rates a distinct advantage would be given, except in highly specialized fields, to local daily and weekly newspapers as against periodicals of national circulation.

The second-class provisions are impractical in that advertising pages are illogically subject to a higher rate than reading pages, whereas it costs no more per pound to deliver one than the other. Imposing two rates of postage will prove a nuisance to both the publisher and the Government and will defeat its own ends.

The prescribed rates are unwise because they will tend to diminish rather than increase postal revenues. Postmaster-generals, past and present, have stated that second-class mails cannot be transported at a uniform rate of one cent per pound, but they fail to consider the enormous amount of stamp and money-order sales induced by periodical advertising, which in reality put the balance definitely on the other side of the ledger. Periodical literature disseminates the latest news, the highest knowledge and the best thought of the nation; it is an educational necessity to everybody and of inestimable service in guiding public opinion along right channels. Papers of every sort have given gladly and generously of their space to further every patriotic movement and have proved invaluable aids in keeping the public in close touch with government activities.

Even those who indorsed a zone system of second-class postage as right in principle never dreamed that Congress would impose rates up to a ten-time advance equivalent to $200 a ton to the outside zone. Such an exorbitant rate has never been charged by any nation for the longest world-routes, even in wartime, and it is unjust alike to publisher, reader and the Government. To saddle the prescribed rates upon reader or advertiser would eventually cause a loss of business so great that the Government as well as publishers would suffer. To shoulder it would jeopardize the existence of thousands of periodicals and force many publishers to withdraw their journals from the mails and rely upon district distributions, express and freight routes to the great loss of the Government and annoyance of the public. Efficient

administration of the Post Office Department implies fair treatment of an industry which benefits everybody, stimulates general business and induces enormous postal revenues.

USE DAYLIGHT AND SAVE COAL.

A NATION-WIDE coal famine threatening industry, transportation and the home, has emphasized as nothing else could do the need for immediate passage of the Daylight-Saving Bill. This bill has the unqualified approval of President Wilson, Fuel Administrator Garfield, thousands of prominent business men, and most of the industrial papers. The equipment and munitioning of the Army and Navy, the transportation of military supplies, the lives of our defenders at home and abroad, the maintenance of essential manufacturing activities, our country's very existence, are dependent upon an adequate fuel supply. There is only one speedy way to insure enough fuel with transportation facilities so heavily overburdened, and that is to substitute daylight for artificial light and use less coal. The value of the daylight-saving movement is indisputable, and now that Congress is awake to the magnitude of the nation's task, it should at once adopt a measure by which England, France, Italy, Portugal, Germany, Austria-Hungary, Denmark, Sweden and Holland have already profited, and which saved 300,000 tons of coal for England during the summer of 1916 alone.

BOYCOTTING GERMANY.

THE project submitted by the Chamber of Commerce of the United States for a general boycott by American business houses of all German goods until a safe peace is assured, is to say the least a subject of remarkable interest. It may by some be called economically unsound, but that is to be proved.

Germany for years kept in force a partial boycott of everything of value possessed by other nations, buying only what she could not imitate or steal.

If the rubber trade took part in the proposed boycott it would refuse to sell to Germany about $1,000,000 worth and refuse to purchase a trifle over $500,000 worth of manufactured goods annually. It would also shut down on purchases of $6,000,000 worth of crude rubber and rubber scrap, and the resale to her of about $400,000 worth of crude rubber. It would also involve the cessation of all purchases of substitutes, compounding ingredients, accelerators, etc. Carried to its logical extreme it would provide for the use of fabrics containing no German dyes, and of refusal to sell to firms that deal in German wares.

Such a plan carried through all lines of industry would indeed be a blow to the big German manufacturers who stand with the Prussian military set. That it would succeed in changing German peace demands on the surface is very likely. It might even evolve peace conditions coming from the whole German people, apparently, and these might appear acceptable to the Allies. But are the German people to be trusted any more than their leaders? Their homes are filled with the loot of Belgium, Northern France and even the Holy Sepulcher of Jerusalem. Their fields are tilled by Belgian and French slaves. They rejoiced in the Lusitania horror, and have taken loud-voiced satisfaction in wholesale breaches of faith, torture and murder. If every two-year-old child in America should have its throat cut over night no pity would stir the German nation. The massacre of millions of Belgians, French and Armenians proves this. The rulers cannot be trusted, neither can the people.

If such a boycott be carried out it should go hand in hand with a continued military service and an added production of ammunitions, and if Congress will not provide for this the business interests should. The only safety to the world and to the United States is not in the promises of the German rulers or people, but in absolute disarmament, and, after that, in international policing to prevent future war preparations.

THE RUBBER ASSOCIATION'S NEW PRESIDENT.

WITH Bertram G. Work for president, the Rubber Association of America lives up to its tradition of wise and efficient leaders. Mr. Work is not only a notable organizer, but knows the rubber business in all of its ramifications down to the last detail. His early apprenticeship with the Goodrich company gave him expertness in every department. Later came the management of the works, and later still promotion into the executive offices. Through it all he kept in contact with every phase of the industry—with the rubber trade expansion abroad, with new processes, inventions, markets, men. The association and the trade are fortunate in their selection of him as a tireless worker, organizer, financier and inventor and in his acceptance of this important office.

TIME WAS WELL SPENT AND MONEY WISELY INVESTED by those who attended the Rubber Association banquet and listened to the patriotic and practical addresses of the distinguished guests present.

Individual work, economy, and, above all, individual responsibility for the efforts of others, was the central thought. It was featured in various terms by the orator-banker, orator-industrialist and orator-bishop. That it was seed sown on fallow ground to result in a vast quickening of the general impulse for service cannot be doubted.

THE FIVE DAY CLOSING ORDER was a costly war contribution on the part of the rubber trade but it was accepted in a fine spirit of patriotism. There were some protests, but there will be no grumbling post mortem. The consensus of opinion is that a condition had arisen demanding drastic measures, or no such order would have issued. Therefore obedience was given cheerfully in the main. So too will Heatless Monday be observed until railroads and coal mines get into their stride again.

What I Saw in the Philippines—VIII.

By the Editor of The India Rubber World.

Harking Back 25 Years—An Adventurous Rubber Man—The Rubber Major—Pacifying a Province—Creation of Fiat Money—Road Building and the Result—Bookless Schools—Hevea Planting in the Province—An Interesting and Perhaps Profitable Experiment.

WHEN the bicycle was at the height of its popularity in the United States, and the cycle tire one of the large products of the rubber factories, there lived and flourished in a Western City a man who made repair cements, patches, repair vulcanizers and analogous specialties. He was practically the first in the field and his wares went all over the world. At the height of the bicycle craze he sold out for a goodly sum, enough to retire on, although he was then in the twenties. I had known him well, but had lost track of him after he retired. Even when, at the Manila Hotel, a friend said that Governor ——— was inquiring for me I failed to connect the name with that of my former friend of the rubber cement business. A day or two later, however, I met him and then I knew that the aforetime rubber man had indeed become the governor of a province in the Philippines. I saw a great deal of him, and partly through what he confessed to, and more from others who were posted on the events of his early days, the reconstruction period, I learned much of the activities of this genial, capable Western Yankee.

NIPA HOUSE.

It seemed that he had been in Cuba as an officer in a volunteer regiment, and later came to the Philippines and, as commanding officer of 400 men, was sent to a far-away province to pacify it. The province during the Spanish occupation had been very prosperous. The people of the Bocolo tribe were not warlike and were very industrious. They were also very friendly to Americans, for it was a big hemp center, and Boston firms sent ships, erected big storehouses, and did a large and profitable business there. When the Spanish rule ended, the people put all of the Spanish officials aboard ships, sent them away and sat tight, waiting for the Americans to come and take affairs under their wing. None came, however, and the Tagalog insurrectos, seeing an opportunity for pillage, descended upon the province like a swarm of angry wasps. They threw all of the principal men into prison, preparatory to extorting ransom by the ingenious and ungentle methods they knew so well how to employ, looted stores, houses and churches, burned, ravished and terrorized, until poverty, disease and famine prevailed everywhere. It was at this juncture that the rubber major and his 400 soldiers arrived.

The conquerors of the Bocolos were not a bit dismayed by the arrival of the Americans. They let them land and then prepared to wipe them out. Here, however, their plans miscarried. Their first formation—bolo men in front with rifle men in the rear—was soon abandoned, because the bolo men refused to face the American rifle fire. Winning every fight, some of which were quite sanguinary, the Americans, after 27 pitched battles, thoroughly cleared the province of the invaders. Then came the problem of reconstruction. The inhabitants of towns and villages had all fled to the jungle and feared to return. As a beginning, the major suddenly descended upon a nearby island, abducted a *padre*, and after explaining his plan to the frightened priest, took him to the capital and installed him in the empty cathedral. This very soon was effective. First, a few very old people stole shrinkingly back to their homes. Then came the women and children, and later the men. At last all were assembled. But it was a community devoid of laws, organization

TYPICAL SUGAR-CANE FIELD.

WEAVING NATIVE CLOTH.

or money. Promptly, however, the market was opened and stalls allotted upon the promise of small fees to be paid later. At once the people brought in what they could use for barter—

CHURCH OF THE CAPUCHINOS, ALBAY.

bananas, mangoes, sugar-cane, eggs and chickens. The soldiers had some money when they first came, but through some snarl at headquarters the command had apparently been forgotten, and no quartermaster nor paymaster had been seen for six months, so that was gone. Money must be had, so they made it. They secured a small quantity of rice paper which the Tagalogs had not thought it worth while to destroy, and cut it into small squares, upon which was written the value in *pesos* or *centavos*. These were signed by the major and one of his lieutenants. To render counterfeiting difficult, an old Chinese die, found in the wreck of a looted store, was used as the official seal. Then the soldiers were allowed to draw 60 per cent of their pay in this money. At once the new currency went into circulation at par. Soon the revenues from the market, from the cockpit and similar municipal enterprises were sufficient to support the government, all of the Americans, of course, serving without salaries.

TYPICAL CART DRAWN BY THREE CARABAOS, ALBAY.

In establishing the schools a minor problem at once presented itself. Not only were there no books, but paper, pens and ink did not exist. Here the commanding officer's tropical experience came in. From the leaf of the banana, smooth, ruled sheets of paper were made. Pens came from the tail feathers of fowl, while ink was made from colored berries. Incidentally, one of the banana-leaf copy books sent to the United States resulted later in the shipment of a dozen or more huge boxes of discarded school books which, while they were in English and unreadable, were treasured by the scholars as an honorable and tangible evidence of their enrollment in the schools.

In road building the soldiers, aided by the natives, achieved wonders. When the natives found that the new road was so good that they were able to haul twice the load in one-third of the time, they became the most practical good roads converts in the world, for they begged to work for nothing in road extension.

Time came when the soldiers were recalled and the major became civil governor. Then, after serving with distinction and winning the loyal regard of his people, he resigned to go into plantation work. His career shows what an American, particularly a rubber American, can accomplish when thrown upon his own resources.

Incidentally, there is rubber there—plantation rubber, and this in the face of the belief of some that typhoons destroy everything as fast as planted.

If one studies the rainfall maps of the Philippines it will be noted that Albay has a very abundant and well-distributed series of rains. The average runs considerably over 120 inches, and with good soil and rich abundant moisture, it should be good for *Hevea*. The only danger seems to be the occasional typhoons.

The rubber major did not think they were likely to harm rubber very much, but sent me for actual information to a San Franciscan, who was already planting *Hevea* on a large scale.

To my questions the Californian said:

"It is possible you have magnified the idea of the typhoon devastation in the northern Philippines, which is a little unfair to that locality.

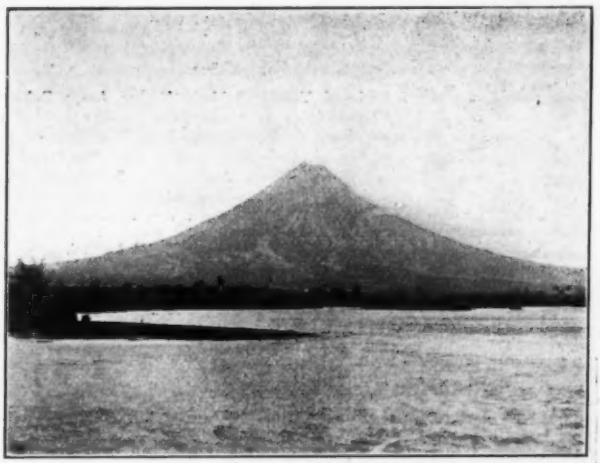
"In 1912, when in search of a coconut investment, I traveled all over the southern islands, Zamboanga, Cotabato, Davao and Mati, and intermediate localities. After my return to Manila I obtained copies of all pamphlets issued by the observatory on typhoons and, it appearing that Mindanao had about half as many such visitations as middle Luzon but was handicapped by most inadequate shipping facilities not likely to be remedied for many years, I concluded to purchase on the island of San Miguel off Legaspi. The records show that six typhoons have passed over our island since 1882, only one of which, in 1915, has proved serious, when we lost 1,300

VIEW OF A HEMP PLANTATION, ALBAY.

trees out of 98,000, and so, of course, our crop for the year.

"I spent last November in the Federated Malay States, visiting

TIBI HOT SPRINGS, ALBAY.



MAYON VOLCANO, LEGASPI, ALBAY.

much of the country between Singapore and Penang, purely for the study of the *Hevea* problem—the climate, degree of humidity, and soil—and my deduction is that the island of Luzon, say to 16 degrees north latitude, is as suitable for Para rubber as the Federated Malay States. Incidentally, the Para rubber grove of Dr. Richmond, at Nueva Caceras, was directly in the path of the typhoon of 1915 and was not materially injured. Our land is forested and we have preserved efficient wind breaks."

It would seem, therefore, that *Hevea* production is possible in parts of Luzon, and certainly all will hope that in the event of typhoons again visiting Albay they will spare the rubber trees.

Time was when I had an idea that a section that was visited by typhoons was left either a desert waste or a mass of wreckage similar to a French town after the Germans had finished with it. But when one travels over the high wind sections and sees smiling fields, fragile Nipa huts, full-fruited palms and no sign of wreckage, it does not seem quite so bad. It is to be noted also that almost without exception the old inhabitants claim that, while the typhoon is very bad on the water and has a nasty habit of building tidal waves that smash piers, inundate coast villages and sink fishing boats, the land damage is not particularly feared. As one remarked:

"I can put my plantation in the lee of a mountain or guard it by forest wind breaks and be safe. It isn't wind that I fear."

"What then are you afraid of?" I inquired.

"Perhaps I am a bit too timorous," he explained, "but I am afraid that we are going, through carelessness, to import a lot of Para diseases from the older plantings in Malaya and Ceylon. Here we are free so far. There a host of diseases are held in check by the finest sort of governmental experts. We have no such plantation police here and are not likely to have. Disease here would therefore have a far more destructive effect." (*To be continued.*)

A WATERWAY.

DOCK, PHILIPPINE PLANTATION CO., ALBAY.

PLOWING RICE.

PHILIPPINE TRADE IN TIRES.

It is only since 1913 that tires have figured as a separate item on the list of imports into the Philippine Islands, and the earliest statistics (1913) show that tire imports for that year totaled $65,639. Since then the trade has steadily grown. For the period of January 1 to December 31, 1916, the amount was $476,933.

War News of the Rubber Industry.

Automobiles to Relieve Railroad Traffic—Baldwin Trains Army Balloonists—Vail Warns Against Overconfidence—The Chemical Service Section of the National Army—Redenbach to Inspect Government Rubber Supplies—The Automobile Indispensable as a Carrier—Better Roads Needed for Overland Truck Transportation—Aircraft Exposition Forbidden—The United States Navy Overshoes—Application of Enemy Trading Rule in Neutral Countries—Horses Now Wear Gas Masks—A Novel War Fund Plan—British Gas Masks Superior to the German—Rubber in Body Armor—The Government Needs Industrial Engineers—"Jusqu'au Bout!"—Republic Rubber Corp. Conserves Cotton Duck—Coal Exemptions for Gas Mask Manufacturers—Thrift and Thrift Stamps—Service Notes and Personals—The Rubber Trade Roll of Honor.

AUTOMOBILES TO RELIEVE RAILROAD TRAFFIC.

J. NEWTON GUNN, president of the United States Tire Co., New York City, in a recent interview urges automobile owners of both passenger and commercial vehicles through individual initiative to cooperate voluntarily with the Government and use their cars more and more to relieve the transportation pressure on the nation's railroads and merchants' delivery service. Said he:

J. NEWTON GUNN.

Individual economy should be practiced to the end that no wastage shall result. It is not necessary to assume that national economy means curtailing the use of automobiles.

The natural function of the automobile, both passenger and commercial, is the transportation of man and merchandise for short hauls. If this is realized, a tremendous amount of railroad mileage may be diverted from short hauls to long hauls, and just that much pressure on the railroads' transportation facilities relieved.

National economy means readjustment, but not necessarily curtailment of the markets for commercial and passenger automobiles. Nor will it reduce the use of automobile tires or other accessories necessary to the efficient operation of a motor car.

It is my firm belief that, when we have satisfactorily ended this war, the automobile and kindred industries will find a market for all the goods they can produce. Many concerns are being called upon by the Government for war products. This will spur these manufacturers on to a use of their remaining facilities in even greater efficiency than has ever been known before, so that during and after the war all of their facilities will be required.

BALDWIN TRAINS ARMY BALLOONISTS.

Captain Samuel Baldwin, dean of American balloonists and the older of the two world-famous Baldwin Brothers, of Quincy, Illinois, is devoting his whole time to the school in San Antonio, Texas, established by the Missouri Aeronautical Reserve. There he is training red-blooded and keen-eyed young men for balloon observation, that important branch of the army service that watches and reports the enemy's every move for five miles back of the lines.

It was this veteran of the air, now nearing man's allotted three score and ten, but with the fire of youth still in his eyes, who built the first parachute and then perfected but did not patent it. And it was his brother, Captain Thomas Baldwin, also devoting his time to the development of this country's air service, who made the first parachute leap from a balloon in San Francisco in 1886 and brought international fame to them both. After a world exhibition tour, which netted them a fortune, they returned to America and built the first successful dirigible for the United States Government, and to this day they have continued to be prominent in the design and manufacture of aircraft. What the Baldwin parachute means in modern army observation is indicated by the fact that not an observation balloon rises without its parachute, so that the observer may escape should hostile guns or airplanes wreck the frail craft.

VAIL WARNS AGAINST OVERCONFIDENCE.

Theodore N. Vail, the telephone magnate and a director in the United States Rubber Co., is among those virile business men of advanced years who have found their activities vastly increased by the war, yet who respond to the call of duty with all the enthusiasm of twenty-one. Although he had retired to his Vermont farm a dozen years ago, he was soon dragged back to business life. Since 1907 he has been the biggest man in the telephone world, and now at the age of seventy-two serves as chairman of the National Unity League, a recently organized body of prominent business men, which is vigorously encouraging the get-together spirit in the conduct of the war. The following remarks from a recent interview characterize the man. Said he: "Many think that the war may be won without everybody helping. It cannot be. The people of this country must be solidly behind the Army and behind the Administration and every individual should feel that he is personally behind the President. Get together—all together—with the punch and the push. It's the only way to win."

THEODORE N. VAIL.

THE CHEMICAL SERVICE SECTION OF THE NATIONAL ARMY.

The importance of chemistry in the conduct of the war has received a gratifying endorsement from the War Department in the establishment of a new division attached to the General Staff and designated the Chemical Service Section of the National Army.

The two immediate purposes to be accomplished by the formation of this division are, first, the unification and more comprehensive development of the various research activities now being conducted for the War Department, and second, the creation of a chemical organization, complete in personnel and equipment, for service with the American Expeditionary Forces in France.

Both the personnel and laboratory equipment of this force are being prepared upon the basis that the American armies in France have a right to the service of our ablest scientific minds and the most complete and adequate facilities for the work which it is possible for the United States Government to supply. Able scientists and some of the best of the younger chemists through-

out the country have responded eagerly to this call to national service.

This chemical unit will serve as adviser to General Pershing on all chemical matters pertaining to the war, and will be attached to his staff through Colonel A. A. Fries, head of the Gas Warfare Division. It will also act as the chemical eyes of the unit in this country, transmitting information relative to chemical problems of the war to the men at work here.

In order that the information collected by this force of scientific men may be of the greatest aid to the research work now being conducted in this country, Dr. William H. Walker, of the Massachusetts Institute of Technology, has been commissioned a lieutenant-colonel, and will have charge of the unification and coordination of many lines of research now being so ably carried on here.

RODENBACH TO INSPECT GOVERNMENT RUBBER SUPPLIES.

William T. Rodenbach, treasurer of Goodyear's Metallic Rubber Shoe and India Rubber Glove companies, Naugatuck, Connecticut, has been appointed to act as inspector general of rubber supplies for the United States Government and its allies. With characteristic energy he accepted conditionally asking that he be given a free hand in his office and that much red tape connected with such official positions be done away with. His wide experience and intimate knowledge of the rubber manufacturing industry render him peculiarly well-fitted for this responsible post. Mr. Rodenbach will retain his position with the Goodyear company, having been granted leave of absence for the duration of the war. He entered the employ of the company as secretary in 1886.

W. T. RODENBACH.

THE AUTOMOBILE INDISPENSABLE AS A CARRIER.

E. H. Broadwell, vice-president of the Fisk Rubber Co., Chicopee Falls, Massachusetts, presents a loyal and optimistic viewpoint on the war and its effect upon the automobile, tire, and accessory trades, and expresses the belief that transportation needs, which constitute the greatest national problem, will demonstrate the indispensability of the automobile as a passenger and freight carrier. Mr. Broadwell writes:

Curtailment in production of cars must necessarily come, but to thousands of dealers that does not mean, by any means, closing their doors. Cars which would no doubt become obsolete will be overhauled and kept in condition. The owner of a car to-day who has been in the habit of buying a new one each year, if unable to get that new one this coming year, will have his car put in shape—possibly in much better shape than the one who would purchase it second-hand. In other words, by the very shortage of cars business will be created.

The greatest problems our country faces to-day are those of transportation. It does not make any difference whether in city or country, transportation is a factor. Individual transportation by automobile has been one of the greatest factors in the development of our country and with the probable output this year of 1,800,000 cars, if production were cut 50 per cent, it would put between 800,000 and 1,000,000 new cars into operation. This would mean, with an estimate of 4,000,000 in operation to-day, with a possible necessary discarding of old models which can no longer be made to run, that by next year we should see 4,500,000 to 4,750,000 cars in use. All require service, and if any individual to-day disposes of his machine through inability to operate it, the man who buys it buys it for operation.

I believe we are going through a period that is going to show us more and more the necessity of the automobile, not as some people would put it for pleasure use, but for actual utility. It is safe to say, not 10 per cent of all automobiles in use can be considered purely pleasure cars, the other 90 per cent being passenger cars and used for a real purpose.

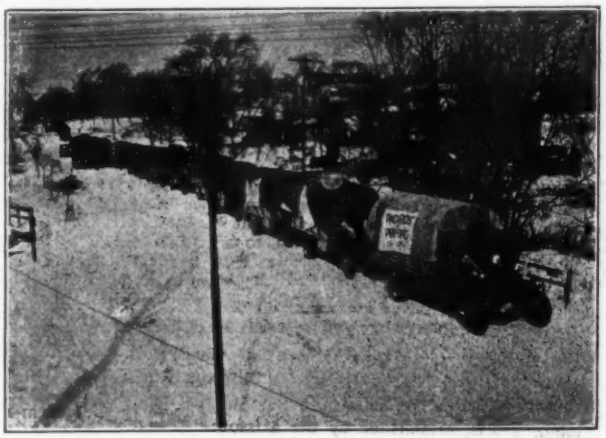
BETTER ROADS NEEDED FOR OVERLAND TRUCK

The dispatch of a train of thirty loaded army transport motor trucks, under their own power, from Detroit to the seaboard, marks a new epoch in military transport in this country.

This fleet of thirty 3-ton Packard motor trucks equipped with solid tires, left Detroit in the midst of a snowstorm which brought a very heavy fall throughout the entire North. After an eight days' battle with the snow, in places drifted almost as high as the trucks, through which veritable tunnels were driven, the caravan reached Pittsburgh, where the Lincoln Highway was met and followed. Invaluable experience was gained which will enable these drivers to pilot the next train through in greatly reduced time.

Thousands of motor trucks must be brought to the eastern seaboard for shipment to our forces in France, and it is likely that before long the presence of motor truck trains on our highways will become a usual sight. The difficulties encountered in moving this train of 30 trucks—an infinitesimal part of the thousands that the Government must have—emphasize graphically the great need of improved highways. An enormous amount of freight could now be diverted from the overburdened railways if good highways existed throughout the country, but our great national transportation need finds us with only one-tenth of our 2,500,000 miles of public roads available for heavy motor truck traffic.

Motor trucks, unlike many other kinds of military equipment, are capable of delivering themselves under their own power with a load of supplies under their water-proofed tarpaulins be-



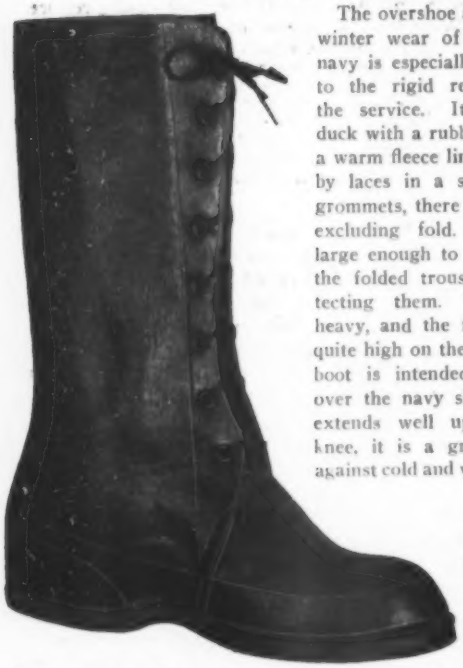
THE TRUCK TRAIN EN ROUTE.

sides, so that if the thousands of trucks, yet to be delivered, can be brought to the East, independent of the railroads, the vast array of rolling stock that would be required to haul them may be utilized in transporting the enormous amount of supplies that must help to keep our forces in the field.

AIRCRAFT EXPOSITION FORBIDDEN.

By Presidential proclamation dated January 1, 1918, expositions of aircraft have been prohibited for the duration of the war, to prevent communicating to the enemy the present status of aircraft invention in the United States.

THE U. S. NAVY OVERSHOES.



The overshoe adopted for the winter wear of sailors in the navy is especially well adapted to the rigid requirements of the service. It is of heavy duck with a rubber surface and a warm fleece lining. It fastens by laces in a series of eight grommets, there being a water-excluding fold. The top is large enough to give room for the folded trousers, thus protecting them. The sole is heavy, and the foxing extends quite high on the quarter. This boot is intended to be worn over the navy shoe, and as it extends well up toward the knee, it is a great protection against cold and wet. A contract for 15,000 pairs of these boots was recently awarded the United States Rubber Co., New York City. The overshoes form part of the seaman's winter suit described on page 204 of our January issue and now shown in the accompanying illustration.

Press Illustrating Service, Inc., New York.

WINTER OUTFIT OF UNITED STATES SEAMAN.

APPLICATION OF ENEMY TRADING RULE IN NEUTRAL COUNTRIES.

The War Trade Board has authorized branches of American corporations and business houses in neutral countries and countries associated with the United States in the war to accept and pay drafts, to deliver goods warehoused or otherwise stored, and to perform other similar acts, even if such acts involve trading with "enemies" or "allies of enemies," when necessary to prevent a breach or violation of a law or commercial obligation enforceable in the courts of the country where the branch is established. It is provided in addition, however, that this authorization shall not be construed to permit subsequent undertaking or entering into contracts or business or commercial transactions which will involve trading with "enemies" or "allies of enemies" in order to carry out the same; and every case involving transactions or trading with "enemies" or "enemy allies" shall be reported to the War Trade Board within thirty days after the occurrence thereof, on a form to be furnished by the War Trade Board.

The Chief Cable Censor of the United States has issued the following notice concerning messages sent to and from any concern listed on the enemy trading list:

1. Parties who have obtained a license from the War Trade Board to communicate with any one on the enemy trading list will in cablegrams to such a correspondent, place "ETL" followed by the number of their license as the last words of the message; except that these words may be followed by a test word in a message from a privileged banking institution.
2. The observation of the same rules will be required on incoming messages from parties on the enemy trading list.
3. Cable communications to and from parties on the enemy trading list, although licensed, will be suppressed if they do not conform to the above regulations.

HORSES NOW WEAR GAS MASKS.

Both man and beast now wear gas masks at the front. The troopers in front-line trenches long ago found them a necessary protection against the poisonous fumes blown across No Man's Land from the German side, and more recently have provided similar masks for their dispatch and Red Cross dogs. Until the recent British drive toward Cambrai, cavalry had played only an insignificant part in the war. In planning that gigantic surprise attack it was realized that horses would be as susceptible as their masters to deadly fumes and so were equipped to resist them. This photograph shows the latest gas mask equipment of the British cavalryman and his mount.

Underwood & Underwood, New York.

BRITISH CAVALRYMAN AND MOUNT WEARING GAS MASKS.

A NOVEL WAR FUND PLAN.

W. O. Rutherford, general sales manager of The B. F. Goodrich Co., Akron, Ohio, has worked out a plan whereby Goodrich employes can do their part toward the financial support of the Government during the war without the extra effort and expense involved in various campaigns. While not obligatory, his idea is that Goodrich employes ought to be willing to give a half hours' pay a week toward a fund for war purposes, so that whenever a Liberty Loan or Red Cross campaign is launched, Goodrich employes can transfer from this fund their allotment based on their relation to the total population of Akron. Mr. Rutherford further suggests that other rubber companies become units in a broad scheme on this plan to be administered by a permanent central committee. The suggestion seems likely to be adopted.

BRITISH GAS MASKS SUPERIOR TO THE GERMAN.

Writing of his recent visit to the western front, John C. Curtiss, London representative of the "Dry Goods Economist," asserts that the British have surpassed the Hun in the design of their gas masks as greatly as in their helmets. Comparing the two types he says:

The German gas mask is simply a rubber mask, with goggles fastened to what might be taken for a lantern base, containing chemicals and perforated at the bottom for air, with a hole at the top side with a tube to put in your mouth. Often the wearer is smothered to death, being wounded and unable to remove the mask when lying in the mud.

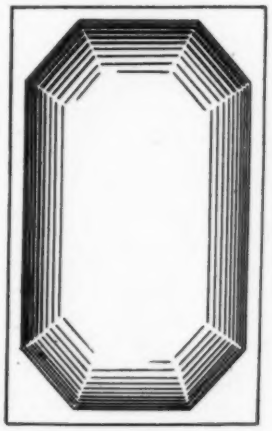
Press Illustrating Service, Inc., New York.

KILTIES WITH THEIR WATERPROOFS IN FLANDERS.

The British mask has what appears to be a small knapsack suspended on the chest from a band around the neck; the rubber mask is put over the head, a clamp fastened on the nose, and a stiff, corrugated tube about two inches in diameter supplies the person from a mixture in the sack, the wearer holding a flat, hard rubber mouthpiece between his teeth. They are uncomfortable, but they do the work.

RUBBER IN BODY ARMOR.

Rubber, asbestos, felt and other materials are now being suggested to render more efficient the body armor which is again frequently seen on the battlefields of France. British patent No. 108,801, taken out by Arthur Corelli, of Sheffield, England, covers a bullet-proof shield, shown by the accompanying view, of imperforable armor plate sheltered behind an anti-rebound composition. This, while offering relatively small resistance to shots, will arrest them and prevent pieces shattered on the armor plate from rebounding or glancing off upon impact. Between a thin outer covering of sheet steel and the heavy steel armor at the back, both curved to conform to the shape of the body, is interposed and cemented in place a composition layer consisting of the gelatinous substance extracted from animal hides and hoofs, mixed with rubber in solution and reinforced by fibrous strings of hemp. The anti-rebound composition is held in compression by turning over the margin of the front plate so as to clinch the armor. Waterproof fabric covers the whole, and straps are provided to hold the shield in place and distribute the weight evenly on the shoulders.



THE GOVERNMENT NEEDS INDUSTRIAL ENGINEERS.

The Army and Navy staff departments continue to demand men of engineering experience, especially in industrial lines. At present the outlook is that this demand will continue throughout the period of the war, and an opportunity to place highly specialized knowledge at the disposal of the Government is thus afforded to men in certain departments of the rubber industry.

In calling attention to this, the United States Public Service Reserve, Washington, District of Columbia, (where records of men willing to serve when called will be kept on file) points out that a man of engineering experience has a rare combination of opportunities open to him, which are not open to the average patriotic American, as follows:

First. To serve the country in his most effective capacity.

Second. To keep in touch with his own profession, with the result that his patriotic service will not have caused him to become rusty by the time peace returns.

Third. To become a commissioned officer and receive much better pay than the average man who has wholly subordinated personal interests and now works for the national good.

Fourth. To perform his service usually without leaving the United States.

"JUSQU'AU BOUT!"

The accompanying illustration shows a stamp which has become a familiar accompaniment of many letters and packages from France. Like the Christmas stamps of the American Red Cross, they are affixed in addition to the required postage. The proceeds are devoted to the relief of convalescent soldiers and those permanently invalided by the war. Twelve stamps are sold in a paper folder for 25 centimes (nearly 5 cents). The words, "Jusqu'au Bout!" (To the End) commemorate General Gallieni's words before the valiant defense of Paris in September, 1914, which contributed so largely to the victory of the Marne, and not only saved Paris and France, but prevented the whole universe from falling under German domination. This noble phrase has become the battle-cry of the French nation, and meets an even stronger echo from most quarters of the civilized world.

REPUBLIC RUBBER CORPORATION CONSERVES COTTON DUCK.

In line with the policy of leading manufacturers to aid the Government in every way in the conservation of materials which are required for war purposes, the Republic Rubber Corp., Youngstown, Ohio, has announced to the trade that after February 1 and for the duration of the war it will discontinue making a number of the so-called cheap competitive brands of mechanical rubber goods in which it believes there is an extravagant use of cotton duck. Henceforth cotton duck will be used only in products best suited to give maximum service at minimum cost.

COAL EXEMPTIONS FOR GAS MASK MANUFACTURERS.

Four rubber companies engaged upon emergency orders for gas masks of the box respirator type were exempted from the order of the Fuel Administrator curtailing the industrial use of coal from January 18 to 22 inclusive and for the nine Mondays following, but only in so far as they were operating on the particular government orders specified. The companies exempted were The B. F. Goodrich Co., Akron, Ohio; the Goodyear Tire & Rubber Co., Akron, Ohio; the Mechanical Rubber Goods Co., Cleveland, Ohio; C. Kenyon Co., Brooklyn, New York.

THRIFT AND THRIFT STAMPS.

In their gifts to employes during the recent holiday season rubber companies sought to encourage greater saving.

Every employe of the Firestone Tire & Rubber Co., Akron, Ohio, including more than 10,000 persons, received as a Christmas gift from the company a bank book with a credit of $1 deposited in a local bank. Every employe in the fifty branches outside of Akron was given $1 in Thrift Stamps. In explaining that the company's idea was to stimulate the spirit of saving and the practice of thrift, President H. S. Firestone pointed to the thrift of the individual German as a great aid to Germany in the world war.

"Before the beginning of the war," said he, "Germany had 23,871,657 savings bank depositors out of a total population of 67,810,000. The United States, with a population of 101,882,479, has but 11,285,755 depositors. Thus 35 per cent of Germany's people are thrifty as compared with only 10 per cent in this country. Again, the average amount deposited per inhabitant is $70.26 in Germany, as against only $49.05 in this country. So it can be plainly seen that the saving habit must be inculcated in the minds of the American people to hasten the successful end of the war."

The B. F. Goodrich Co., Akron, Ohio, purchased $22,000 worth of Thrift Stamps, and as a Christmas gift presented to every factory employe a Thrift Card with $1 in stamps attached as an encouragement toward greater saving. Thrift Stamps are now on sale in every one of the 125 branches of the company throughout the country.

Over $12,000 worth of Thrift Stamps were distributed to employes of the Goodyear Tire & Rubber Co., Akron, Ohio, the day before Christmas. Each person received a Thrift Card containing $1 in stamps.

The National India Rubber Co., Bristol, Rhode Island, has given to each of its nearly 4,000 employes a Thrift Card with one 25-cent stamp affixed, and announces that all filling their cards with 16 stamps in four months will receive another "starter" from the company to encourage saving.

SERVICE NOTES AND PERSONALS.

C. R. Johnson, for three years chief chemist of the Goodyear Tire & Rubber Co., Akron, Ohio, has been commissioned a captain in the Army, and will be on special detail for work on gas masks. Captain Johnson is a native of Massachusetts and graduated from the Massachusetts Institute of Technology in 1911.

Every former employe of the Goodyear Tire & Rubber Co., Akron, Ohio, now in service and whose address was known, received a crisp $1 bill on Christmas.

The Boot Repairing Unit of the Quartermaster's Corps at Camp Meigs, Washington, District of Columbia, includes several former employes of Goodyear's Metallic Rubber Shoe Co., Naugatuck, Connecticut. Samuel W. K. Allen, Jr., formerly of the receiving department, has been appointed a lieutenant of this unit, and among those enlisted are Harold L. Goodwin, of the office department; Alfred C. Greene, foreman of the stitching department; Lloyd H. Lehmer, of the laboratory; Shirley E. Culver, of the packing room, and Thomas Brooder, of the shoe making department. Clarence M. Rupp has enlisted in the U. S. Naval Reserves in New Haven.

G. G. Giese, secretary and manager of the Panama Rubber & Equipment Co., St. Louis, Missouri, has joined the Quartermaster's Department.

Charles C. Goodrich, a director of The B. F. Goodrich Co., Akron, Ohio, and a son of its founder, Dr. Benjamin F. Goodrich, has received a major's commission in the ordnance branch of the service and has been assigned to duty in France. It will be recalled that his brother, David M. Goodrich, also a director of the Goodrich company, is a major of infantry. The war spirit appears to be a heritage, as their father served in the Civil War.

Guy E. Tripp, of New York City, heretofore chairman of the board of directors of the Westinghouse Electric & Manufacturing Co., Schenectady, New York, has been given a commission as colonel and placed in charge of the Production Division of the Ordnance Department. The function of this division is to follow up, supervise, and stimulate the production of all articles purchased by the Ordnance Department.

The girls of the Goodyear Tire & Rubber Co. branch of the Y. W. C. A., Akron, Ohio, have perfected a military organization. Although Uncle Sam will hardly permit them to emulate the example of their brave sisters in the Russian Battalion of Death, in actual military service, their determination to keep up with the spirit of the times led them to ask for military instruction. The girls drill each week under the instruction of the Goodyear drillmaster.

L. W. Dumont, of Pell & Dumont, crude rubber brokers, 68 Broad street, New York City, has enlisted in the 306th Field Artillery, National Army, and is stationed at Camp Upton, Yaphank, New York.

J. M. Rector, a director of the Sterling Tire Corp., Rutherford, New Jersey, and now a major in the United States Army, heads the list of 78 young men who left the above company to do their bit in this war.

THE RUBBER TRADE ROLL OF HONOR

KELLY-SPRINGFIELD TIRE CO., NEW YORK CITY.

AKRON FACTORY.

George Bates,	Matthew Dixon,	Z. Newiavonski,
George Bieles,	E. A. Drake,	W. B. Oatman,
Robert Black,	Lawrence Garrety,	W. W. Peeler,
Sam Blotnicky,	John Grayshock,	Sam G. Pegg,
John Boyer,	George Hazlett,	David Pizel,
Charles Braley,	William Hoagland,	Edward W. Rannells,
Clayton Brand,	Steve Hombardy,	Andy Rebersky,
Horace Brewster,	Thomas L. Jenkins,	B. H. Rodemaker,
Arthur Brigger,	Charles Jordon,	R. R. Rutledge,
Walter Brozaski,	R. Lee,	M. E. Smart,
Albert Bryan,	Leo Livingston,	Grover Snyder,
Gordon Butler,	Thomas S. Lorentz,	Leroy Stallings,
J. W. Carter,	L. S. Malone,	Steve Stouglinski,
J. Cavelier,	Alfred Maryman,	R. J. Terry,
Charles Caverly,	Herman Maxey,	R. C. Thornton,
P. M. Clark,	Tom Milson,	Henry Tyrrell,
Jerry Collett,	R. E. Moore,	Carl Wallenburg,
R. E. Combs,	Peter Moracie,	J. M. Whittaker,
Guy Cruikshank,	Mike Nemsh,	H. F. Young.

WOOSTER FACTORY.

Harry Brauneck,	R. S. Easterday,	Glen Weiser.
Ellis Davenport,	Glen Hider,	

GENERAL OFFICES, NEW YORK.

Edward Kilbride,	Edwin A. Lake,	Leonard Ramo,
Murray Kossow,	Robert B. McClary,	Samuel Wechsler.

BRANCHES AND DEPOTS.

Herbert G. Brooks,	C. O. Hogue,	Charles Mathews,
Daniel Callahan,	Robert Holden,	Pearl Miller,
Robert Campbell,	Percy Holladay,	C. J. Murphy,
Byron C. Crawford,	Roy H. Kahl,	Norman Wallace.
M. E. Donlan,	Edward W. Kelly,	
Harvey W. Goldkamp,	John Masterson,	

THE FISK RUBBER CO., CHICOPEE FALLS, MASSACHUSETTS.

Hugh Allen,	Hugh Kaulbach,	Otto Munz,
Theodore Fish,	Fred O. Lindsey,	Richard Reynolds,
Harold A. Fitzsimmons,	Tomas Madden,	Art Richards,
Raymond B. Griggs,	Frank Martin,	William Roberts.
Donald Hutchinson,	Stanislaw Mroczek,	

MARATHON TIRE & RUBBER CO., CUYAHOGA FALLS, OHIO.

Stanley M. Cramer.....Camp Sherman.

MASON TIRE & RUBBER CO., KENT, OHIO.

MACHINE GUN CORPS.

Harold Bosk,	Edward Dyers,
Clell Cannon,	Ivan Shanafelt.

332ND REG. U. S. INFANTRY.

Leon Grabill,	Frank McCray.
Reese Harris,	

NO ADDRESS.

F. E. Colburn,	Wesley J. Wilson.
Walter Meyers,	

Lawrence Boyd.....166th U. S. Infantry.
Robert N. Hawley.....331st Reg. U. S. Infantry.
Frank Masden.....Comm. Dept. A. L. S. C.
Lee O. Miller.....Ordnance Dept., France.
Howard Price.....Camp Sheridan, Montgomery, Ala.
Dudley Smith.....112th U. S. Engineers.
Herbert Wright.....Rainbow Division, A. E. F.

Germany vs. the United States in Rubber Manufactures.

By Gustav Heinsohn.

A GREAT upheaval in the world's commerce has been brought about by the war in Europe. While Great Britain maintains her supremacy in foreign trade, the United States has advanced from third place to a close second, supplanting beleaguered Germany, whose commerce has ceased to exist for the period of the war, her ports blockaded and the flower of her great merchant fleet in enemy hands or interned in neutral waters.

Since 1893 the United States has had a substantial trade balance in its favor, but during the past three years that balance has been more than trebled, the excess of exports over imports being $652,875,915 for 1913 and $2,135,599,375 for 1916. Last year the foreign commerce of the United States, imports and exports, amounted to $6,531,366,395, against $4,258,504,805 in 1913, and represented an excess of $857,616,395 over Germany's high-water mark in 1913.

Aggressive American business men are asking themselves if this gain can be maintained after peace is declared, and those of clear vision who are willing to face the facts admit that there are many difficulties in the way. They realize that much of this trade increase represents the waste of war, which will cease in normal times, and that with the vast armies of belligerent nations restored to industry, agricultural and manufacturing production will increase greatly in Europe and still further reduce the demand for American goods. As to the trade with neutral nations throughout the world which Germany formerly held, it is certain that a mighty effort will be made to regain it and that American interests in foreign markets must face keen competition from the German cabals being formed in various lines of manufacture. Such a combination of dyestuff companies was effected late in 1915, primarily to throttle the infant American dyestuff industry after the war, and it has been rumored that a similar organization among manufacturers of rubber goods is contemplated; this in addition to the combination of manufacturers of insulated wire cables in 1913, which did not prove a conspicuous success.

If American rubber mills are to maintain the foothold they have gained in foreign markets they must admittedly organize to combat German initiative, but fortunately a vast difference exists between the American dyestuff and rubber manufacturing situations, and an unfavorable outcome would by no means be a menace to the latter. It is to be expected that Germany will find it easy to regain much of her former trade in lines in which she had specialized and held a virtual monopoly, such as dyestuffs, industrial chemicals, pharmaceutical drugs and the like. This will be particularly true of certain fast colors and other products of secret processes not yet duplicated; but in rubber manufacture there were no such secret processes, unless, perhaps, that of making Klingerit steam packing, and that, too, appears to have recently become common knowledge. There is to-day no German rubber product not as well if not better manufactured in the United States. Moreover, the American rubber industry, unlike that of Germany, rests securely upon the firm foundation of its enormous and growing home market. Whereas in 1913 Germany exported 40 per cent of her $80,000,000 rubber product, in 1916 the United States exported only 5⅔ per cent of its $600,000,000 product, the actual figures being $33,769,500 and $33,934,348, respectively.

During the fiscal year 1913, American imports of German manufactured rubber and gutta percha goods amounted to only $558,318, against exports of American rubber goods to Germany totaling $973,141, as follows: automobile tires, $401,196; shoes, $132,154; belting, packing and hose, $56,673; boots, $4,561; tires other than for automobiles, $1,658; miscellaneous goods, $376,899. The balance of trade was decidedly in our favor, Germany's portion being only 57 per cent of ours.

On the other hand, the exchanges in crude rubber, scrap, reclaim and substitutes favored Germany, our imports for 1913 being $6,350,444 and our exports and reexports $422,295, or only 6⅔ per cent as much as Germany's. This came about not because Germany is a big rubber producer, but because of her great merchant marine carrier system, the best units of which are now under the Stars and Stripes and being made seaworthy much faster than had at first been anticipated. Happily, the government shipbuilding program is along lines which will never again find us dependent upon the vessels of any nation to maintain our foreign commerce. Moreover, there is consolation in the reflection that of the $101,333,168 worth of crude rubber imported during the fiscal year 1913 only a trifle over six per cent came from German brokers. Germany must build up another great merchant marine before she can hope to occupy her former position as an ocean carrier or even carry the product of her factories in her own bottoms, and in that she will be handicapped in having lost her chief tonnage customer, the United States.

What with the absence of incoming supplies of crude rubber and the lack of skilled workers, the German rubber industry has of late come to a virtual standstill. War equipment only is being attempted, and only such articles as can be made with reclaimed scrap and a little synthetic rubber, the latter having proved to be too expensive and unsatisfactory without admixture with a certain percentage of new rubber, of which but a very little is being smuggled through the blockade. Recovery from this setback will require several years at best, and must be made in the face of great antipathy and prejudice. Ruthless warfare and the selfish aims animating it have turned world sentiment against Germany, even among her formerly friendly neutral neighbors and good customers. Germany's chief outlet for rubber goods was, like our own, to allied nations. We now have the business she has lost. The major part of our gain in exports is to Europe, Russia—an almost exclusively German market—showing an enormous gain; and after the bitterest war in history it is reasonable to believe that allied nations will give trade preference to the United States, which will have helped them immeasurably with men, money and munitions. In any event, possession of the business constitutes a distinct advantage; we can match German quality, but can we meet German prices? Low prices will be the most potent weapon with which to break down prejudice in the world's markets, and the pooling of interests through cabals will reduce production and selling costs to the minimum and make very low prices possible.

But before going further let us see what the German and American rubber industries have to work with.

In 1913 the German rubber industry numbered approximately 600 manufacturing plants, of which 150 were companies of importance. The total authorized capitalization was about $25,000,000, with a working capital of probably twice that sum, the authorized capital of 33 leading firms aggregating $20,943,500. Not less than 40,000 operatives were turning out manufactured rubber goods to the value of $80,000,000 annually, consisting of steam packings, rubberized fabrics, tires and tubes, hose, textile goods, belting and miscellaneous goods in lesser quantities. The tire product amounted to $38,000,000, of which $14,000,000 was exported, nearly half to France and England. German rubber exports led the United States almost three to one, the figures being $33,769,500 and $12,441,220 respectively. England, France,

Italy, Austria-Hungary and Switzerland were the largest consumers, with Russia, Netherlands, Denmark and South America —chiefly Argentina and Brazil—also important. Crude rubber consumption was about 20,000 tons, of which one-fifth came from German colonies now controlled by the Allies.

At the present time the rubber industry of the United States numbers upwards of 650 manufacturing firms. Not less than 150,000 persons are engaged in manufacturing an annual product estimated at $600,000,000, of which $300,000,000 represents tires alone, tire exports for 1916 being $15,211,943, of which more than half went to England and France. United States exports of manufactured rubber goods for 1916 amounted to $33,934,348, or more than Germany's high-water mark in 1913. Crude rubber imports last year totaled 142,600 tons.

Although American exports of manufactured rubber goods have nearly trebled since the outbreak of the war, the gain in actual figures is but $21,493,128, or a trifle over 3½ per cent of our annual production. As Germany's total rubber goods exports are but 5⅓ per cent of our production, and her total production but 13⅓ per cent of ours, it is obvious that her rubber industry must undergo enormous expansion to become a serious menace, an expansion which would require many years to accomplish, the task being the more difficult in that Germany will emerge from the war virtually a bankrupt nation. The maximum war credit set by her financiers in 1914 as the safety limit was 80,000,000,000 marks, and already a total of 100,000,000,000 marks has been exceeded.

While German rubber manufactures never made any considerable headway in our protected market, there is a vast difference between the Payne tariff of 1909 and the Underwood tariff of 1913. The rubber schedule ranges from 10 to 25 per cent, instead of 25 to 40 per cent, as formerly, and corresponding reductions characterize most of the other schedules as well. While its immediate effect was a general decrease in the value of imported materials for manufacture and an increase in imports of manufactured goods, the war soon stopped continued observation of its normal workings. With the coming of peace, the destitution of Europe will render the return of a like condition less rapid, but its eventual coming is as certain as is the upward revision of our tariff as a matter of protection. Meanwhile, let American rubber manufacturers take a leaf from the German book and checkmate German rubber combinations with one or more of their own. Such combinations need in no way conflict with the Sherman law, and, indeed, have the approval of the present administration. In South America, where we shall find ourselves on an equal footing with Germany after the war, they would help us immeasurably to build up adequate selling forces and banking facilities, and by elimination of overlapping effort to make prices truly competitive. Germany still expects to recover her South American trade quickly, but antipathy is gradually creeping into that market also and low prices will be the weapon with which American possession of the business will be fought. So great will be the advantage of low-priced labor in Germany that even the greater output of our wonderful machinery and an export combination of maximum efficiency may not be able to cope with German producers.

The war has indeed opened the doors of South American trade to the United States. Our imports from Latin America, including Mexico, Central America, South America, and the West Indies, with the exception of British, Danish and Dutch territory, have increased from $422,419,973 for the fiscal year 1913 to $760,132,729 for 1916, or from 24.40 to 34.58 per cent. Our exports for the same period have increased from $323,775,885 to $411,193,859, although this represents a decrease from 13.13 to 9.49 per cent of our total exports. While the balance of trade is against us more heavily than ever, it is no longer financed almost exclusively through England and the Continent. As a result of newly opened American branch banks and exchange of credits with Latin American bankers, the direct financing of exports and imports is now fairly well established and places our trade relations on a far more favorable basis than hitherto.

To the rubber industry the growth of our Latin American trade means less than to many other lines of manufacture. For instance, whereas the per capita consumption of rubber goods per year in the United States has reached about $5.50, it probably does not exceed 25 to 50 cents in South America. During the two years up to the outbreak of the war the United States paid South America $60,000,000 for crude rubber and sent manufactured rubber goods to the value of only $1,500,000, as contrasted with Germany's $7,000,000 for a single year. This is not far from the measure of Germany's South American trade in manufactured rubber goods which the war has given to us and which she will go to extreme limits to recover, particularly cables, hard rubber goods, steam packing and toys—lines in which she has specialized and been preeminently successful.

But in every respect South America is developing by leaps and bounds; the demand for rubber goods of every sort constantly increases with a rising civilization and the field is so broad now that both Germany and the United States may continue in it with gains rather than losses. Therefore, let American rubber exporters combine, not to prevent the economic regeneration of Germany, but to hold trade gains and develop legitimate competition. While business is by no means a philanthropic enterprise and our increasing capital engaged in export business must be protected, we may well remember our high purposes in entering the war, namely, to crush the Prussian military system, not German industry. Let us open the eyes of the German people to our virtues rather than to our faults and be as fair to them in business as in war, defending our own holdings while not seeking to prevent them from acquiring holdings of their own. By such an example of determination tempered with tolerance, an export organization of the American rubber industry would do much toward influencing all the world powers after the war to reach amicable trade agreements that would establish honorable rivalries of commerce.

CONSERVATION OF WATERPROOF CLOTHS.

The Government is urging conservation of material used in the making of garments of every sort. Should it become necessary, specific restrictions will be issued. Meanwhile, however, the leading raincoat manufacturers of the country are endeavoring to develop styles attractive to the eye yet requiring a moderate amount of material. In the design of waterproof garments there has been a fine degree of sanity for several years, but what fashion did five to fifteen years ago to waste material in rubber lines is shown by the accompanying illustration. Gone are the absurd leg-of-mutton and bishop sleeves, the flaring bell-shaped skirt, the many plaits and the mass of strap-like appliqué about the waist and shoulders. The saving in textiles has been great but according to experts it will soon be greater.

SUBSTITUTES FOR LEATHER SOLES.

Practically all the substitutes for leather for shoe soles are made wholly or partly of rubber, and the Mellin Institute of the University of Pennsylvania is experimenting with various new substitutes for the same purpose. It has enlisted the services of 50 policemen, each of whom wears a leather sole on one shoe and a leather substitute on the other, so experimenting and endeavoring to give each new material or composition a thorough test. The United States Government is also making similar tests and has 100 soldiers thus equipped to determine the wearing qualities of the substitutes.

Notable Patriotic Rally of Rubber Men.

EIGHTEENTH ANNUAL BANQUET OF THE RUBBER ASSOCIATION OF AMERICA.

OF the many brilliant and successful functions that have been held under the auspices of the "Rubber Club," none have surpassed that held at the Waldorf-Astoria on the evening of January 7 of this present year. The informal socials in the reception rooms, the decorations, the seating arrangements, and the banquet itself were all in perfect taste and thoroughly well appointed.

During the dinner, led by the orchestra, the banqueters, more than 700 in number, joined in singing patriotic songs. "America," the "Battle Hymn of the Republic," the "Battle Cry of Freedom," and "Tenting To-night" are a few that were sung with infinite spirit and feeling.

The postprandial exercises under the leadership of the newly elected president, Bertram G. Work, were full of interest and enthusiasm from beginning to end. Striking a chord of international patriotism, the presiding officer proposed a toast to the President of the United States; he followed with toasts to the King of England, the President of France, the King of Italy and the King of the Belgians; after each, the national anthem of the country honored was spiritedly rendered by the orchestra.

The chairman then explained that the retiring president, Harvey S. Firestone, who according to custom should preside, was prevented by illness from so doing. He then read the following telegram from Mr. Firestone:

With an earnest endeavor to get in prime condition, I accepted loyally the most disagreeable doctor's prescriptions. Despite this, I find I am prevented from having the great pleasure of presenting the president's report and presiding at the annual dinner. Please convey to the officers, directors, committees and members my sincere appreciation of the interest and support given the Association in the past two years, and wish all the same happy, congenial time we had at last year's dinner. It is a matter of keen regret that I cannot be with you.

Continuing, Mr. Work then read for Mr. Firestone the president's annual report.

PRESIDENT FIRESTONE'S REPORT.

As President of the Rubber Association of America during the past year—the most momentous in the history of the country, as well as of our industry—I want to thank the committeemen and all our members for the hearty support and assistance which you have given your directors. For the benefit of you who have not been able to follow the business activities of our Association, I should like to speak briefly of the events of the past year.

The entrance of our country into the great war in Europe has placed greater responsibilities upon our Association. Our activities have been largely concerned with the carrying out of the details of the British rubber guarantees, as in the past two years. With the severance of relations with Germany, our Association offered its services unreservedly to our Government to perform any duties which it might wish to entrust to us.

This offer was gladly received by the Department of Commerce which, several weeks after war was declared, approached the Rubber Association to negotiate plans for controlling the import and export of crude rubber and rubber goods.

These negotiations have culminated in the arrangements with which the trade is now familiar, by which all crude rubber arriving in the United States is consigned to the Rubber Association of America and the Association is entrusted with supervising its distribution under the auspices of the War Trade Board at Washington.

FRANK A. VANDERLIP.

This has resulted in greatly increasing the sphere of activities of the Association and necessitated the opening of offices in Washington, San Francisco and Seattle. It will also doubtless be necessary to maintain agents at other ports of entry, particularly as the British Government has transferred its work in connection with rubber control to the War Trade Board of the United States, in cooperation with whom the Association is now working.

On behalf of the Association, this work is being handled by the Committee on Rubber and Kindred Products, formerly known as the Rubber Advisory Committee.

The broadening of the scope of the activities of the Rubber Association has been accompanied by the largest increase in membership in any one year. Last year our total firm membership numbered 231. There are now 315 enrolled so that at the present time, it may be safely said that all the important interests in the rubber trade and its allied industries are now comprised within the firm membership. As the various groups of the industry are now well represented by the divisions organized prior to this year, no new divisions have been added.

During the past year the Arbitration Committee which was provided for at our annual meeting has been appointed and organized, and rules and regulations for the conducting of arbitrations have been adopted.

Our social events have been modified during the past year, owing to the war. Our mid-summer outing was given up and the funds usually expended for this purpose donated to the Red Cross.

A golf tournament was held at the Trenton Country Club on October 16. It was a most enjoyable event, thanks to the hospitality of our New Jersey members. The Association was well represented and incidentally a substantial contribution was made to the "New York Sun" Smoke Fund for our soldiers in France.

In retiring as president of your Association, I wish to thank you for the honor which you have conferred upon me, and I desire again to express my appreciation of the hearty cooperation which I have received from every member of the committees who have worked hard and faithfully to make the Rubber Association of America one of the largest and strongest trade organizations in the country.

A telegram was then read from Secretary of War Baker expressing regret that he could not be present, emphasizing the importance of the rubber industry in war preparations and urging the Association even further to extend and invigorate its operations.

VANDERLIP ON INDIVIDUAL RESPONSIBILITY IN THE WAR.

Frank A. Vanderlip, president of the National City Bank of New York, spoke earnestly and forcefully on individual responsibility in relation to the man power and shop capacity necessary to equip and maintain our fighting forces, and made a strong plea for greater efficiency and economy. We are just coming to understand what a great task we have entered on, he stated. We have seen it measured in dollars, in appropriations made and contracts let amounting to nearly twenty billions, but we are beginning to realize the enormous task the workshops of the country have in speeding up production in proportion to our ability to pay for it through Treasury credits. We are just waking up to the fact that money alone will not bring victory; that this is a war of equipment as well as of men and money, and that the demand upon our productive capacity is so great that it can be met only if the whole people recognizes individual responsibility and foregoes many comforts and luxur-

EIGHTEENTH ANNUAL BANQUET OF THE RUBBER ASSOCIATION OF AMERICA, INC., AT THE WALDORF-ASTORIA, JANUARY 7, 1918.

ies it has been used to having. We have a buying capacity such as we have never known, and it is being exercised in competition with the Government to slow down the production of army and navy equipment. The Government has not been able to expend the great war appropriations so readily granted because of lack of shop capacity. Production has been only half as rapid as had been anticipated, and it is no longer a question of what a man can afford to buy, but of what the nation can afford to have him buy. We must and shall have a background of good business, but we must engage primarily in the business of war, and in this period of prosperity realize our responsibility of citizenship that an expanded business in luxuries may not hamper the outfitting of the fighting forces. Referring to the railroad situation, Mr. Vanderlip said:

This breakdown of transportation has been in large part a result of our very prosperity, in large part the result of the enormous amount of shipments that have been made possible, made necessary, by the prosperity of the country and the demand that people have made for things of unusual comfort and luxury. I do not regard the breakdown of the railroads as an indictment of private ownership of railroads. Rather than that, it is an indictment of government control of railroads in the form in which we have had it. The breakdown did not come on the 28th of December; it started far back of that, in the unfair treatment that railroads have had.

It lies in the impossible situation in which the railroads were placed, with increasing costs of operation, rapidly increasing wages, higher cost of living in every particular, without any adequate increase in their income. It looks as if the railroads have passed permanently from private control in the form in which we have known it. Whether or not that is a good thing must now remain to be seen. The great thing that has been accomplished up to this moment is to wipe out the prohibitions that have been laid upon the railroads. These prohibitions, compelling competition, preventing cooperation, made them less efficient than they otherwise would have been, probably very much less efficient. We shall see how much more efficient they are with these prohibitions removed.

In conclusion, he emphasized the duty of employers to make clear to employes their opportunity to help win the war through Thrift Stamp savings for personal as well as national benefit. Said Mr. Vanderlip:

Harris & Ewing, Washington, D. C.

JAMES A. EMORY.

I am told that the people here employ 400,000 men. That means that a great responsibility lies on you. I believe, looked at just selfishly, just from the point of view of the future of your business, that you owe it to yourselves to understand this movement for gathering together the savings of people in small amounts, or bringing to the support of the Government a vast army of new investors, of having thirty million stockholders in the United States—which is the thing I am thinking to accomplish—of having thirty million new savers, thirty million people who will be financially interested in this country, and who will be laying by something for the rainy day that may come—and it may be a very rainy day. If your employes, the four hundred thousand men who are working for the corporations represented in this room, are brought to a patriotic cooperation with the Government, it will be a great influence for the future. If they are brought to regard economy as a means by which they can help to win this war, if they are brought to lay by so that they have got some stake, they will be better employes; they will be better citizens, and the future of the country will be more secure as will the future of your business. I believe there is not a man here who cannot well afford, from the point of view only of his corporation, to understand this movement thoroughly, to forward it to the fullest extent of his ability, with the army of employes which you represent. It is this idea of the individual responsibility for the winning of the war that we must get into the minds of all of us. And you have your responsibility to see that that idea is carried on, that people grasp it, that they feel that this propaganda of economy is not a doleful affair. Rather it is an opportunity. Men everywhere are patriotic, men everywhere are looking for the opportunity to help, something to get hold of to help in this gigantic struggle. Now, here is the opportunity. It lies clearly before us, the way to help, the thing for us individually to do. And you can carry that idea to a multitude of men. And it is your duty, it is your responsibility, it is your greater opportunity to see that men regard this as their opportunity to help. We would all be in this fight if we could, but I tell you if you cannot go you must see that you must forego. You must see that you must help in this work of making room in workshops, of releasing labor, of making it possible for this government so to equip the army that it will be an effective instrument to break down Prussian militarism.

On motion of William A. Perrett, unanimously carried, a telegram was sent to President Wilson assuring the support of the Rubber Association of America in furthering the War Savings undertaking of the Treasury Department.

EMORY ON INDUSTRIAL PRODUCTION AND STRIKES.

James A. Emory, counsel for the National Association of Manufacturers, spoke frankly and convincingly on industrial production in the war with particular reference to organized labor strikes. While the facts he presented were, indeed, ominous, his optimistic future outlook reflected the faith of the ordinary business man in the ultimate patriotism and individual character of American labor. Dwelling on the interdependence of nations and the importance of America's part in supplying her allies, he emphasized the fact that this war is a struggle of competitive efficiency in production and distribution—a battle fought not merely by men in trenches, but by men in factories, on farms, in forest and mine; that efficient production is victory and inefficient production is defeat. Mr. Emory said in part:

We are facing a condition in this country which we must frankly meet and recognize—that we not only have been, but are threatened with continuous interruptions of production of the most serious character. . . . Every day lost, every bit of production that fails or stops makes longer and more bitter the struggle, and as more surely adds to those dead faces that from the French fields look up to-night against that starry winter sky. Yet, since this war began, here in the tenth month, production has been interrupted by the deliberate and concerted cessation of work here in these United States with the loss of a greater number of work days than in the period that preceded our entrance into the war. . . . because men could not adjust their differences except by a competition in waste.

The making of steel, munitions and tractors, the mining of coal and copper, the hewing of timbers for ships, all have been halted, and halted for long periods, by the arbitrary and capricious demands of individuals and organizations. . . .

The Bureau of Labor Statistics, in its December bulletin, tells us that, according to the last figures obtained during the month of September, 1917, there were 283 strikes in that month and that it estimates that, with those unreported there were at least 450, while in 171 of those strikes for which figures are supplied, 147,000 men were idle for an average at a minimum of 7 1/3 days; which means, if we multiply by the number of men—and it is a minimum number—that in that month alone there were over a million work days lost, when the world cries for the fruits of production. The official representative of the Shipping Board tells the Senate Investigating Committee that, within their experience, there have been 540,000 work days lost in the construction of vessels, equivalent to the labor of 20,000 men in one month. And in the very same publication that gives us this information, we find the official German statistics, taken from the "Bremer Zeitung," which tell us that the number of strikes throughout the German Empire during the year 1916 did not amount to one-fourth of that minimum number reported to have occurred in the United States in the single month of September, 1917.

This, gentlemen, quite apart from the effective restrictions on production that come of any arbitrary demarcation of the work, that prevent the employment of unskilled labor or of handy men, and reserve skilled labor to the function which it alone can perform. . . .

A man who takes advantage of his government in this hour, be he the employer at the head of a corporation, or the labor union official at the head of his organization, is equally the enemy of the common cause; and whatever his motive may be, he who causes a suspension of production at this time, performs the work of the public enemy. For, in a contest in which victory must be won by things which are produced and placed at the service of those who lead our armies and guide our ships—in a time when our factories are called upon to produce as they never have produced before, and when our fields must not only feed our own people, but must feed the hungry and the starving of the devastated nations of ruined Europe, every waste of food, every waste of money, every waste of effort, is depriving those who fight the world's battle for liberty of the means with which to carry banners on to victory. . . .

Now, I do not say these things to indict and attack; I say them because they are a condition that must be faced, unless, like the Spartan fool, we hide beneath our garment the fox that bites at our vitals, and deny its existence. I say this because I believe the working men of this country are just as patriotic as their employers, but we by example, or by precept, and by appeal, must beg and exhort them in this hour to realize that upon the joint labor of the employer and the employed depends the success of the war. America can do her duty and fulfil her mission in this great hour only by the most perfect and efficient cooperation between those who work and those who manage, between those who earn and those who spend, between those who govern and those who are governed. . . .

Shall we doubt because there arise factions or classes that for the time refuse to perform their service unless it can be performed under the conditions which they fix, when we recognize this hour as one in which no man can fix the conditions of his services to his nation but the nation who calls him there? For in the great decision of the Supreme Court of the United States this day that upholds the Draft Law, the Chief Justice tells us that the objections to calling men into public service are frivolous, and that the power of Congress to raise and support armies gives it its complete authority to find the men to fill their ranks, and, consequently, to find the means by which to support those men. . . .

This is an hour when we are calling every citizen to service, and when no man and no organization can discriminate against the patriotic service in the factory or in the Army of any American who is ready to serve. We all are alike beneath the flag.

Press Illustrating Service, New York

BISHOP DU MOULIN.

BISHOP DU MOULIN ON AMERICA'S VOCATION IN THE WAR.

The Right Reverend Frank DuMoulin, Bishop-Coadjutor of Ohio, spoke again this year with his customary eloquence and characteristic optimism regarding the ethical aspect of world affairs. Every nation, he asserted, has laid upon it the mandate to make some particularized contribution toward human welfare and progress, and in contrast to the recreancy of Germany he pictured the unselfish idealism of an awakened America and its place in working out the Divine plan for the betterment of all humanity. Providence has bestowed upon America as four great national assets for world uplift more bountiful physical resources than any other nation; a remarkably varied and richly productive climate; the most representative and versatile type of manhood, and unprecedented wealth. If ever there was a nation that was thrown into existence in the crucible of modern life, that had a distinctly defined vocation, it is the United States of America to-day. This the United States has recognized by its entrance on the right side of the greatest fight between right and wrong that the world has ever known.

Saying that we are now living in the noblest age in the history of man, he continued:

Men, I believe the age to be forward-bound. Its hope is anchored in the future; its golden day is yet to come; it is progressive; it is the vanguard of the ages as it leads onward and upward in that mighty movement towards that "One far-off Divine event to which the whole creation moves." Beyond the red and reek of war there is a dawn worth fighting for. Out of the darkness of the night the world moves into the light. It is daybreak everywhere. The crimson shafts of the morning are seen red upon the Eastern hills, as the age, the race, goes on into the new world, the new time, the new life, the new condition and the new opportunity and responsibility toward which Providence has led us. I believe, gentlemen, that this is the greatest time in all the history of the ages in which a man could be allowed to live, because manhood is more potent and vital in its influence upon life to-day than at any other time in history, the long history of manhood upon the earth.

One man has greater power and opportunity in forming the flexible destinies of the world in which he lives than a hundred men in any age of the past or, so far as we can see, a hundred men in any age that is yet unborn and that is yet to come. Furthermore, one dollar to-day will do more, I believe, in shaping and determining the destinies of the world and the ages, than the same amount in any age in the past multiplied one hundred-fold, or than the same amount in the ages that are to come a thousand-fold. It is as though we lived in the very nick of time, in the plastic, formative, constructive age of the world's history. Napoleon once said to his soldiers before one of the greatest of his battles, "Men, to-morrow as you enter upon that battlefield, upon you look down forty generations of an ancestry that is gone, waiting for you to fulfil their determination." But I say that as we fight this fight to-day and invest ourselves to the full and the maximum in it, we can say to ourselves that forty generations of the future, unborn as yet, are looking to us to shape and determine the destinies that are to control their lives until the world becomes the seat of a self-respecting, liberty-loving humanity, and the forces, the reeking forces of lawlessness, are driven roughshod off the face of the earth.

The spiritual awakening that is resulting from America's entrance into the world struggle, Bishop DuMoulin contended, will restore the moral well-being of the whole people. In order to effect the maximum, the 100 per cent efficiency and cooperation in the investment of mechanism and manhood for winning the war, he pointed out that the high moral quality of the individual is absolutely imperative, whereas, generally speaking, our tendencies of late have been rather in the opposite direction. Said he:

Now, gentlemen, it is not what a man is that counts. He may be the best man in the world, or he may be the worst. I don't care. It is what a man is becoming that counts and tells. So it is with a nation. A nation may be the best or the worst. That matters not. It is what a nation is in process of becoming that counts in its influence and power upon the earth. It was not what America was that gave us very much concern in the past few years. We were all proud of her; we loved her. Whether the land of our adoption or the land of our birth, our love and loyalty went out to her in fullest measure. We loved her and were proud of her to the full. But it was what America was in danger of becoming that caused most of us very serious concern. We were in a condition of morally unstable equilibrium. The fine sense of the right and wrong of the nation was being dulled and stunted and blunted. We were enervating our moral structure. We were depreciating our spiritual vision. We were watering the stock morally and lowering the type, though we were not conscious of it. It began to express itself in the place where it always first manifests itself, in the home life, at the hearthside of the domestic life of America, with its infelicities and infidelities, and was beginning to tell the story of conditions that were exactly similar to the conditions that preceded the decline and fall of ancient Rome. Just as we have heard down the corridors of the centuries the crash of the empires thundering to the dust, for this self-same reason, if it had not been for the moral renaissance that has to-day come to America, the awakening of our conscience, the arising of our moral ideals and their restoration, then I say, men, we would have been in danger, the same danger as those mighty nations that thought themselves so invulnerable that they styled themselves eternal. We dig deep beneath the dust of the centuries to-day to find some remaining evidence of their vaunted strength and splendor, and we find them buried in the sepulchers of their own past, interred in the sarcophagi of their own self-indulgence.

But since we met last we have awaked; we have been aroused. We declined to work out our contribution in an atmosphere of peace, and doing that, there has been but one alternative left, and that was to be compelled to work it out in the sufferings,

privations and horrors of war. The nation then stands to-day in a hopeful condition, because it is facing the dawn; its day of renaissance is upon it; its process of regeneration is now in full and splendid flux, and we are forward-bound in the vanguard of the nations to make, not merely "the world safe for democracy," but democracy morally safe for the world.

MEMBERS AND GUESTS PRESENT.

AT THE PRESIDENT'S TABLE.

Bayley, C. Clive,
Bouin, Hon. A. O.,
Cartmell, Van H.,
Cole, W. T.,
Du Moulin, Rt. Rev. Frank,
Emory, James A.,
Hodgman, George B.,
Hood, Frederic C.,
Hoyle, Brig.-Gen. Eli D.,
Peterson, Frederick B.,
Smart, W. A.,
Vanderlip, Frank A.,
Wilson, Charles T.,
Work, B. G.

ALPHABETICAL LIST.

A

Achelis, F. G.,
Adams, C. J.,
Adams, H. J.,
Adams, J. J.,
Alland, Leon,
Andersen, E. A.,
Anderson, F. C.,
Anderson, J. D.,
Andrews, W. S.,
Appleton, F. H.,
Appleton, Judge Charles,
Appleton, Lloyd E.,
Armitage, J. D.,
Armstrong, H. G.,
Arnold, W. H.,
Ashcroft, R. W.,
Ashley, Thomas A.,
Astor, A. Melville,

B

Babcock, F. H.,
Babcox, E. S.,
Bacon, H. M.,
Badenhop, Robert,
Bailey, J. R.,
Baird, Collier W.,
Baird, H. W.,
Baird, Robert B.,
Baird, Robert L.,
Baird, Wm. F.,
Baker, G. R.,
Baker, H. D.,
Baker, H. C.,
Balch, W. H.,
Baldwin, James C.,
Baldwin, S. D.,
Ballou, Roland H.,
Barnard, H. H.,
Barnwell, E. H.,
Barnes, C. W.,
Barton, B. W.,
Bass, W. H.,
Bassett, F. W.,
Basten, Otto,
Bates, E. A.,
Baum, J. E.,
Beal, Herman L.,
Bedell, Harold H.,
Bedford, Bruce,
Belcher, E. W.,
Belcher, Fred S.,
Bers, Aaron,
Bers, Edward,
BeSaw, Charles A.,
BeSaw, E. W.,
Birkenstein, Louis,
Birkenstein, Milton,
Bishop, E. A.,
Bixler, H. W.,
Blackwell, W. H.,
Blake, H. F.,
Blanchard, H. J.,
Blandin, V. C.,
Blatt, H. O.,
Bliss, W. R.,
Boggs, Charles R.,
Bourn, Augustus O., Jr.,
Bourn, Col. Stephen W.,
Bradley, C. E.,
Braender, F. L.,
Braender, H.,
Braender, W. P.,
Brenner, James,
Brinckerhoff, E. A.,
Broadwell, E. H.,
Brodhead, Garrett, Jr.,
Brooks, E. H.,
Brouard, E. W.,
Broughton, J. S.,
Brown, A. H.,
Brown, Andrew H.,
Brown, Mr.,
Brumley, H. V.,
Brush, George,
Bruyn, William E.,
Bryant, Earle L.,
Bryant, George G.,
Buecher, E.,
Bunker, Horace,
Burdick, A. H.,
Burgess, Charles S.,
Burr, A. E.,
Burton, Theodore E.,
Butler, Obadiah,
Byles, W. E.

C

Caldwell, E. M.,
Caldwell, J. D.,
Callahan, J. T.,
Camp, H. C.,
Campbell, Philip H.,
Campbell, Samuel S.,
Candee, C. N.,
Candee, W. C.,
Capen, Louis,
Carkhuff, S. G.,
Carleton, W. S.,
Carnahan, G. H.,
Carr, Ashton L.,
Carroll, J. M. S.,
Cartmell, Robert,
Cary, J. D.,
Case, C. C.,
Cast, J. F.,
Chadbourne, J. H.,
Chalfin, Joseph,
Chandler, John J.,
Chipman, R. L.,
Christie, J. A.,
Clark, C. B.,
Clark, C. S.,
Clark, Myron H.,
Clemens, James,
Clement, P.,
Clements, Dr.,
Clifford, James J.,
Clift, Robert E.,
Cobb, H. Z.,
Cobb, James H.,
Cochran, Henry J.,
Cohen, Isidor,
Coleman, H. H.,
Colt, R. C.,
Conlin, A. J.,
Conradt, Mr.,
Cook, Charles S.,
Cook, C. E.,
Cook, H. L.,
Cook, M. M.,
Cook, O. R.,
Cooke, G. A.,
Cooke, Vincent,
Corbin, C. E.,
Cornell, A. Boyd,
Cottle, George T.,
Coughlin, E. J.,
Coughlin, T. B.,
Cowen, Rawson R.,
Crane, R. B.,
Cranz, W. B.,
Craver, B. B.,
Cremer, H. R.,
Crowley, John T.,
Cummings, E. O.,
Cummings, H. H.,
Cummings, W. L.,
Curtis, F. L.,
Cutler, D. A.,
Cutter, William O.

D

Daggett, H. A.,
Damamann, M.,
Dane, Francis S.,
Dann, C. A.,
Dannenbaum, H. M.,
Dannerth, Frederic,
Davis, Edgar B.,
Davis, G. G.,
Davol, Charles J.,
De Lanie, Herbert S.,
De Long, Wm. A.,
Desmond, Thomas A.,
Devine, Jas. W.,
Dickerson, George B.,
Dickinson, F. S.,
Didier, Henry,
Dodd, Samuel H.,
Donaldson, R. M.,
Donovan, M. J.,
Drake, F. A.,
Drake, R. E.,
Drayton, Judson,
Drew, Walter,
Drisler, W. A.,
Duclos, Louis O.,
Duffy, Louis A.,
Dumont, L. W.,
Dunbar, F. W.,
Dunbar, J. Frank, Sr.,
Dunbar, J. Frank, Jr.,
Dunn, H. T.,
Dunn, W. H.,
Dunsford, S.,
Durr, H. H.,
Duryee, A. R.,
Dwyer, Thomas A.

E

Eagles, R. P. M.,
Earle, Russell W.,
Ecker, F. H.,
Elbogen, Paul,
Eskenazi, R.,
Evans, S. M.

F

Fairbank, L. G.,
Fall, Sydney,
Fargo, A. W.,
Farson, John,
Favor, Irving P.,
Fay, E. E.,
Feinburg, D.,
Ferguson, Irving B.,
Field, H. E.,
Fielding, H.,
Fields, R. K.,
Figart, D. M.,
Finck, Carl,
Finley, Joseph,
Firestone, H. S., Jr.,
Firestone, R. J.,
Fisk, H. G.,
Fisk, Haley,
Flint, Dr. H. A.,
Foote, R. F.,
Fox, Frank F.,
Francis, A. W.,
Fraser, Edgar B.,
French, H. W.,
Freshman, Charles,
Fries, R. J.,
Frissell, F. H.,
Fulkert, Charles,
Fuller, Harold P.,
Fulper, Edward B.,
Fultz, David S.,
Furth, O. H.

G

Gardner, T. M.,
Garretson, C. D.,
Garthwaite, A. A.,
Gaston, Clarence E.,
Gaston, William F.,
Gates, H.,
Gaver, F. W.,
Gay, E. A.,
Geer, W. C.,
Giles, James F.,
Gill, O. W.,
Githens, H. A.,
Glaenzer, G. B.,
Glass, R. E.,
Glidden, A. A.,
Goff, F. H.,
Goldman, Herman,
Goodwin, Leonard,
Gordon, W. S.,
Gough, Wallace L.,
Gove, F. G.,
Grafton, Edwin H.,
Graves, B. O.,
Gray, Daniel,
Green, H. M.,
Greene, N. Lincoln,
Greene, W. E.,
Greenough, Allan B.,
Grifbon, J. J.,
Griffin, Robert G.,
Gunn, J. N.

H

Haartz, J. C.,
Haldane, D. Douglas,
Hall, George E.,
Hall, J. P.,
Hamilton, R. S.,
Hammesfahr, W.,
Hardenbergh, Ambrose,
Hardin, C. W.,
Hardy, Roger S.,
Hardy, W. E.,
Harlow, Robert C.,
Harris, Hayden B.,
Harrison, O. M.,
Hartford, P. C.,
Hauff, H.,
Heischmann, E. L.,
Henderson, B. W.,
Henderson, E. M.,
Henderson, F. B.,
Henderson, F. R.,
Henderson, H. H.,
Henke, Gustave R.,
Henne, Geo. W.,
Hering, Henry F.,
Herron, John,
Hewins, E. D.,
Hewitt, H. H.,
Hichborn, G. F.,
Hill, F. G.,
Himebaugh, L. C.,
Hirsch, I. Henry,
Hodgman, S. T.,
Holcombe, H. W.,
Hopkins, Mr.,
Hopkins, M. G.,
Hopkinson, Ernest,
Hopper, C. C.,
Horn, Frederick J.,
Houk, H. L.,
Howard, Daniel S.,
Howell, B. J.,
Hubbard, H. B.,
Huber, Edward E.,
Hydes, Thomas.

J

James, H. B.,
Jamieson, R. E.,
Jamison, C. S.,
Jeandheur, George E.,
Jenckes, F. L.,
Jenkins, H. W.,
Jewett, H. M.,
Johnstone, J. T.,
Johnstone, W. A.,
Jones, E. P.,
Jones, Frederick H.,
Jones, S. H.

K

Kains, Archibald,
Kanki, Eizo,
Kaufman, M. B.,
Kaufmann, C. B.,
Kavenagh, William E.,
Kearns, John,
Keeler, Louis V.,
Kelly, J. H.,
Kelly, Timothy J.,
Kelly, Dr. W. J.,
Kelly, William J.,
Kendall, J. A.,
Kennedy, D. G.,
Kerr, J. H. S.,
Kies, W. S.,
Kimball, T. F.,
Kingston, A. C.,
Kittle, F. Lester,
Klauber, E. C.,
Kloss, Geo. C.,
Kreuder, William J.,
Krogh, I. P.,
Kubie, David.
Kugler, H. W.,
Kurvy, J. A.

L

LaDow, Jesse E.,
Lahey, F. T.,
Lambert, J. A.,
Lamont, Sloan, Jr.,
LaMotte, F.,
Lamson, F. L.,
Landers, Mr.,
Laurie, I., Jr.,
Laurie, W. D.,
Lazarus, H. E.,
Learned, James H.,
Le Pan, Louis N.,
Lewis, Seneca G.,
Lewis, Tracy S.,
L'Hommedieu, Paige B.,
Liddell, Wm., Jr.,
Linerd, J. B.,
Lingley, F. W.,
Litchfield, P. W.,
Little, Clinton E.,
Littlejohn, Lomax,
Littlejohn, Lomax, Jr.,
Littlejohn, R. M.,
Lloyd, Francis E.,
Loeb, Milton,
Loewenthal, Max,
Lohmann, A. P.,
Long, J. W.,
Louis, Irving J.,
Louis, Joseph J.,
Lowenthal, R. M.,
Low, C. H.,
Low, R. A.,
Lowe, George, Jr.,
Lowman, J. S.,
Ludington, G. A.,
Ludwig, L. J.,
Lund, Carl O.,
Lynah, James.

M

McCallum, Fred.,
McClaren, H. L.,
McConoughby, D.,
McDonald, A.,
McDonough, Alfred G.,
McKay, C. B.,
McKay, E. B.,
McKenna, Francis R.,
McKenny, L. J.,
McLean, Jos. F.,
McMaster, H. B.,
McMichael, J. C.,
McMichael, L. P.,
MacKusick, H. A.,
MacMillan, John A.,
MacPherson, Warren,
Mackay, William,
Macomb, John W.,
Maguire, John W.,
Maguire, T. A.,
Mahoney, P. H.,
Mahony, Walter B.,
Maltus, W.,
Manchester, A. A.,
Marcus, A.,
Marean, Browning E.,
Marland, Wm. H.,
Marsh, H. L.,
Marshall, T. C.,
Martin, Bertram T.,
Mason, D. M.,
Mason, O. M.,
Maurer, Edward,
Maurer, E. J.,
Maus, J. B.,
Mayo, G. H.,
Meacham, John J.,
Meade, James,
Measure, Charles,
Merrell, J. H.,
Merriam, I. B.,
Meyer, Adolph,
Meyer, Charles A.,
Meyer, Otto,
Meyers, A. C.,
Miho, Kantaro,
Miles, Col. D. E.,
Miley, C. E.,
Miller, Amos C.,
Miller, Charles E.,
Miller, H. C.,
Miller, I. A.,
Miller, Wm. B.,
Milne, Gordon,
Milner, W. M.,
Miner, W. H.,
Mitchell, J. K.,
Montgomery, Henry,
Moon, A. E.,
Morehead, H. J.,
Morgan, John,
Morse, W. M.,
Moses, Fred L.,
Movack, F. E.,
Mowe, J. V.,
Muehlstein, H.,
Muehlstein, J.,
Mullett, W. C.,
Murphy, Fred K.,
Murray, C. Edw., Jr.,
Murray, J. Cornell,
Myers, L. J.

N

Nagano, Tamotsu,
Naylor, R. B.,
Nevin, A. Parker,
Newcombe, Richard N.,
Nichols, Mr.,
Nickel, F. B.,
Norwood, Guy E.,

O

Oakley, C. H.,
Oakley, L. M.,
Obalski, T. W.,
Oberlander, M. A.,
O'Brien, James,
Odell, James E.,
Odell, L. G.,
Oliver, N. E.,
Osterloh, A. F.,
Owens, R. J.

P

Page, John E.,
Parsons, W. Guy,
Partridge, A. G.,
Partridge, F. E.,
Patrick, R. W.,
Pearce, H. E.,
Pearce, Robert M.,
Peaty, F. H.,
Peech, Lawrence,
Pell, G. E.,
Perlish, Henry,
Perrett, William,
Peugnet, J. J.,
Pfaff, E. F.,
Pfeiffer, Wm. F.,
Pharis, Carl.
Pitcher, Conrad N.,
Pitcher, W. L.,
Place, C. A.,
Place, Charles H.,
Place, F. N.,
Plumb, L. J.,
Poel, Frank,
Post, F.,
Pratt, Archer S.,
Pratt, B. H.,
Pratt, L. R.,
Presbrey, Frank,
Price, T. B.,
Procter, Wm. L.,
Proctor, Lawrence B.,
Pusinelli, Fred.,

R

Raymond, H. E.,
Reagan, D. G.,
Reddy, H. H.,
Reeve, Arthur,
Rice, Robert L.,
Richards, Leonard, Jr.,
Richards, T. G.,
Richmond, C. A.,
Ridge, W. F.,
Rieder, T. H.,
Riley, H. B.,
Roberts, M.,
Robertson, J. G.,
Robinson, Francis H.,
Roche, Frank,
Rockwell, George H.,
Rodman, H. B.,
Rogers, Walter F.,
Roig, Harold J.,
Ropes, Ripley,
Ross, F. G.,
Rothschild, M.,
Rousmaniere, J. E.,
Ruddell, A. G.,
Russell, J. H.,
Rutherford, W. O.,
Ryckman, W. G.

S

Sanders, W. W.,
Sattler, E. A.,
Saunders, R. E.,
Sawyer, A. M.,
Schaeffer, S. A.,
Schaffer, F. F.,
Scheel, H. Van Riper,
Schulthess, Ernest,
Schwab, F. M.,
Scott, W. C.,
Seaman, F. A.,
Sears, S. H.,
Seiberling, F. A.,
Seko, Kohnosuke,
Semple, C. H.,
Severance, H. C.,
Seward, William,
Sharts, F. W.,
Silliman, E. B.,
Simpson, W. B.,
Simonson, W. A.,
Sisler, L. E.,

Skinner, John,
Skirm, George W.,
Slusser, C.,
Smith, A. W.,
Smith, Frank E.,
Smith, H. O.,
Smith, Herman E.,
Smith, H. W.,
Smith, J. Sheppard,
Smith, L. F.,
Smith, Theodore E.,
Smith, Willard P.
Smith, Wm. B., 2d,
Snodgrass, R. P.,
Sorrick, C. E.,
Spadone, Amedee,
Spadone, Henry,
Spencer-Hess, A. C.,
Spraker, L. D.,
Springer, F. V.,
Stabler, Walter,
Stadelman, G. M.,
Stedman, James H.,
Stephens, Geo. P.,
Stephens, William,
Stern, Fred,
Stiles, Lynn D.,
Stiles, Wm. H.,
Stimpson, H. W.,
Stokes, Charles E.,
Stone, J. Everett,
Stretch, C. B.,
Studebaker, C. D.,
Swaeny, C. R.,
Sweeney, E. C., Jr.,
Swinehart, B. C.,
Sydeman, Joseph,
Sydeman, William.

T

Tajima, Shigeji,
Talbott, F. R.,
Tallman, A. V. W.,
Taylor, M. N.,
Tennant, H. O.,
Tenney, John, Jr.,
Teshima, Tomotake,
Thalhimer, A. S.,
Thomas, J. W.,
Thomas, L. H.,
Thomas, W. G., Jr.,
Thompkins, Mr.,
Thornton, A. D.,
Thorstensen, C. E.,
Thropp, Peter,
Tobin, Horace B.,
Tompkins, L. D.,
Townsend, A. F.,
Townsend, G.,
Tucker, A. G.,
Tullar, Byron E.,
Turner, M. A.,
Tweedy, O. S.,
Tyson, Robert E.

V

Van Alst, J. Milton,
Van Cleaf, John C.,
Van Etten, J. de C.,
Van Kleeck, C. M.,
Van Siclen, Arthur,
Vance, L. T.,
Vanderbilt, R. T.,
Vander Plas, Gov.,
Viall, H. T., Jr.,
Vorhis, H. S.

W

Walsh, Thomas H.,
Walton, W. R.,
Wanning, F. D.,
Wanning, H. F.,
Warner, Lewis C.,
Warren, A. W.,
Weber, L. E.,
Weeks, P. S.,
Weida, H.,
Weitling, W. W.,
Welton, Spencer,
Wesley, P. R.,
Weston, J. C.,
Westren, J.,
Whipple, M. P.,
Whitehead, Alfred,
Whitehead, R. R.,
Whitehead, H. H.,
Whitehead, Robert V.,
Whitenack, W. A.,
Whiting, Mr.,
Whitman, R. P.,
Whittaker, William,
Whyte, A. E.,
Whyte, J.,
Wies, George A.,
Wilcoxson, J. F.,
Williamson, H. L.,
Williams, A. W.,
Williams, H. M.,
Williams, E. S.,
Wilson, C. Dudley,
Wilson, E. H.,
Wilson, W. E.,
Wolff, S. L.,
Wood, Charles E.,
Wood, Le Roy,
Wood, Theodore,
Woodard, S. P.,
Woodbury, R. B.,
Woodhouse, D. A.,
Woodward, Fred R.,
Woodward, H. J.,
Woodward, Van Lear,
Worthington, H. D.

Y

Yamanaka, Seizaburo,
Young, C. T.,
Young, Philip E.,
Yule, W. H.

Z

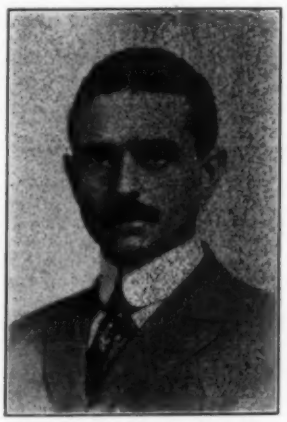
Zerfing, Dr. H. F.

The Annual Meeting of the Rubber Association of America, Inc.

THE annual meeting of The Rubber Association of America, Inc., was held at 2.45 p. m., January 7, at the Waldorf-Astoria, New York City, Van H. Cartmell, first vice-president, presiding in the absence of President Harvey S. Firestone. After the call for the meeting and the minutes of the previous meeting were read, the reports of the secretary and treasurer, covering the activities of the past year, were presented and adopted. President Firestone's report was read at the banquet in lieu of the customary president's address.

VAN H. CARTMELL,
First Vice-President.

BERTRAM G. WORK,
President.



CAPTAIN H. STUART HOTCHKISS,
Second Vice-President.

REPORT OF THE SECRETARY.

Since our last annual meeting the firm membership of The Rubber Assciation of America, Inc., has increased to 315 firms in the rubber and allied industries, which is an increase of 84 firms during the past year. It may now be said that the Association comprises nearly all firms of importance and standing in rubber manufacturing and its allied industries, as well as the crude rubber importers.

During the twelve months covered by this report the Executive Committee has held 14 meetings and the Board of Directors seven sessions. Numerous committee meetings of the general Association, as well as all divisions, have been held at the Association headquarters, where the directors' room is always at the disposal of our membership for meeting purposes.

The Rubber Advisory Committee, which is now known as the Committee on Rubber and Kindred Products, has held fortnightly sessions, and since the War Trade Board took over the control of crude rubber importations the committee has been holding weekly sessions in order to deal with the numerous requests for information which come from the War Trade Board.

The organization of the various groups of manufacturers as divisions of the Association was accomplished previous to our last annual meeting and a very satisfactory year of work can be reported from all of these organizations.

Our annual mid-summer outing was omitted last summer, but a golf tournament was held at the Trenton Country Club, Trenton, New Jersey, in the middle of October, which brought together 200 members in the industry and proved a most enjoyable occasion. Our president, Mr. Firestone, entertained, at his home in Akron on November 17 and 18 last, the directors and members of standing committees which had served during his two terms as president, and made this the occasion of a special dinner of rubber manufacturers in the neighborhood of Akron, which was held at the Portage Country Club on November 17. This also proved a most enjoyable occasion and also helped to the solidarity of the Association.

The banquet of 1917 was held at the Waldorf-Astoria on the evening of January 8, 1917, the attendance being well over 600, an increase of over 100 per cent over 1916.

We have lost the following members by death during the past year:

Samuel Wright, of the Philadelphia Rubber Works Co., and treasurer and general manager of the Acushnet Process of New York., Inc., died at Yonkers, New York, January 18, 1917.

Captain Richard S. Satterlee, vice-president of the Habirshaw Electric Cable Co., died at New York City, February 15, 1917.

Edward Mortimer Mundy, treasurer of the Philadelphia Rubber Works Co., died at Philadelphia, Pennsylvania, March 6, 1917.

Francis Cornelius Van Dyk, president of the Sterling Tire Corp., died at Paterson, New Jersey, May 21, 1917.

A report of the Legislative Committee was then accepted and placed on file, and an informal report of the Committee on Rubber and Kindred Products was heard.

REPORT OF THE LEGISLATIVE COMMITTEE.

Your Legislative Committee has had an interesting year.

The War Revenue Bill brought out many problems, not the least of which was the proposed import tax on crude rubber.

Your Legislative Committee believed an excise tax on manufactured goods was much to be preferred to an import tax on crude rubber for many reasons, among them being that an excise tax would cost the Government less to collect; that the consumer could see a direct excise tax where he could not see an indirect import tax; that the contracts and export business would be less disturbed by an excise tax than by an import tax.

After consultation your committee found that most firm members agreed with the conclusions of your committee, and the New York members secured the services of Martin W. Littleton, and with the co-operation of several firm members prepared briefs and facts and figures.

Your chairman was unable to go to Washington with the committee, which was augmented by other firm members, and together they made to the Senate Finance Committee an able presentation of the objections to the import tax, and urged an excise tax on the rubber industry, if a tax was to be placed on every industry.

The proposal of an import tax was dropped from the bill, and no excise tax was incorporated into the bill.

Your Legislative Committee has made it plain to senators and congressmen that the rubber trade would cheerfully pay its fair pro rata share of war taxes, but always asked that the rubber industry should not be selected for special taxation of any kind, and that taxes should be assessed so that every industry should be taxed equally, and that there should be no inequalities, and that industry in general should not be discriminated against, but that all business should be taxed equally, and that in no case should industry be so taxed as to make industry unprofitable, or so that the investing public would not be attracted to its securities.

So-called social legislation, including workmen's compensation, hours of labor, old-age pensions, health insurance, unemployment insurance and other such social problems, have taken much time and study, and there has been compiled a lot of facts and statistics which any of our firm members may have access to in the office of the National Industrial Conference Board.

Your committee expresses the hope that these compilations will assist legislators to make laws on social problems, based on facts rather than on theories and on oratory.

Your Legislative Committee has also interviewed the Tariff Commission regarding the revision of the Administrative Act of the Tariff Laws, and has accepted the invitation of the Tariff Commission to make suggestions regarding other phases connected with the tariff.

Your committee has made suggestions regarding Patent Office practices, especially relating to trade-mark classifications.

There have been many other small problems, such as the interpretation of Child Labor Law requirements.

May I express my especial appreciation of the work of Messrs. Hotchkiss and Hodgman, the New York members of the committee, and also the thought that the chairmen of active committees should be men residing in or near New York.

REPORT OF THE COMMITTEE ON RUBBER AND KINDRED PRODUCTS.

In the absence of the chairman, Charles T. Wilson, the work being done was outlined by William J. Kelly, as follows:

I don't think there is really much that I can say, except to note the change from the situation as far as the importation of crude rubber is concerned, from the imposition imposed by the British Government for the importation of rubber from its possessions, and the fact that all rubber must in a sense come under their rules. In December, December 1 or thereabouts, the United States Government took over all that work, and as a result they asked the Committee on Rubber and Kindred Products to step into practically the same position that they occupied with the British Government; that is to say, have the guarantees pass through their hands. That the committee is doing. Besides that they have added another important work to the committee, and that is in regard to the importation of rubber. If anybody desires to go into the importation of crude rubber they must be practically O. K'd. by the Committee on Rubber and Kindred Products. That is true also with regard to exports. I might say that the whole rubber industry in the United States seems to revolve itself around the Committee on Rubber and Kindred Products, so that the work has been very much enlarged from the time we started in two or three years ago.

That really is about all I can say in regard to it. You will understand from the number of rubber people in the United States what that means. It means that we have a committee of six or seven, which we are going to increase to eight, in order that we may distribute the work properly, so that each may do his share. It means instead of holding fortnightly meetings, as we have done, that we will not only hold them as a body once a week, but also will hold sub-committee meetings every day. So, you can understand what the work of this committee is. All that we ask is co-operation on the part of the members of the Association to try and help us, as we shall try and help them. There are many questions coming up, and if people will only look at all the things in a reasonable light, I think the committee will be able to work out all their difficulties for them without any great hardship to them.

Press Illustrating Service, New York.

NEW BOARD OF DIRECTORS OF THE RUBBER ASSOCIATION OF AMERICA, INC.

Left to right, standing: Harry S. Vorhis, secretary; Charles T. Wilson, A. D. Thornton, William J. Kelly, William E. Bruyn, Charles J. Davol, John S. Lowman. Sitting: John A. Lambert, George B. Hodgman, Bertram G. Work, Charles A. Daniel, Harry T. Dunn, Paul W. Lichfield.

AMENDMENT TO THE CONSTITUTION.

The first sentence of Article IV, Section I of the Constitution was then amended to read as follows:

The board of directors shall consist of twelve firm representatives, who shall be elected at the annual meeting, the directors to be elected at the annual meeting of 1918 to be divided into three classes to serve one, two and three years, respectively, and that thereafter all directors be elected for three years.

ELECTION OF DIRECTORS.

Unanimously approving the recommendation of the Committee on Nominations, consisting of Frederick H. Jones, chairman; William J. Kelly, W. O. Rutherford, Harry G. Fisk and Henry C. Pearson, the following board of directors was elected:

FOR ONE YEAR.

William B. Bruyn, L. Littlejohn & Co., New York City.

Charles A. Daniel, Quaker City Rubber Co., Philadelphia, Pennsylvania.

John S. Lowman, Philadelphia Rubber Works Co., Akron, Ohio.

A. D. Thornton, Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada.

FOR TWO YEARS.

H. Stuart Hotchkiss, United States Rubber Co. System, New York City.

Charles T. Wilson, Charles T. Wilson Co., Inc., New York City.

John A. Lambert, Acme Rubber Manufacturing Co., Trenton, New Jersey.

Paul W. Litchfield, Goodyear Tire & Rubber Co., Akron, Ohio.

FOR THREE YEARS.

Bertram G. Work, The B. F. Goodrich Co., Akron, Ohio.

Harry T. Dunn, Fisk Rubber Co., Chicopee Falls, Massachusetts.

Charles J. Davol, Davol Rubber Co., Providence, Rhode Island.

William J. Kelly, Arnold & Zeiss, New York City.

Telegrams expressing regret at their inability to attend the banquet were read from Governor Charles S. Whitman, Richard Crawford and J. J. Broderick, of the British Embassy, and Charles Clifton.

A vote of thanks was extended to Harvey S. Firestone, who retires from the board of directors as well as from the presidency this year.

DIRECTORS' MEETING.

IMMEDIATELY following the annual meeting the new board of directors went into session in the East Room of the Waldorf-Astoria to organize. The following officers were elected and standing committees appointed for the ensuing year:

OFFICERS.

President, Bertram G. Work, The B. F. Goodrich Co., Akron, Ohio.

First vice-president, H. Stuart Hotchkiss, United States Rubber Co. System, New York City.

Second vice-president, Harry T. Dunn, Fisk Rubber Co., Chicopee Falls, Massachusetts.

Secretary-treasurer, Harry S. Vorhis, The Rubber Association of America, Inc., New York City.

EXECUTIVE COMMITTEE.

Bertram G. Work, chairman, The B. F. Goodrich Co., Akron, Ohio.

Harvey S. Firestone, Firestone Tire & Rubber Co., Akron, Ohio.

H. Stuart Hotchkiss, United States Rubber Co. System, New York City.

Harry T. Dunn, Fisk Rubber Co., Chicopee Falls, Massachusetts.

Paul W. Litchfield, Goodyear Tire & Rubber Co., Akron, Ohio.

William J. Kelly, Poel & Kelly, New York City.

COMMITTEE ON RUBBER AND KINDRED PRODUCTS.

Charles T. Wilson, chairman, Charles T. Wilson Co., Inc., New York City; H. Stuart Hotchkiss, United States Rubber Co. System, New York City; Bertram G. Work, The B. F. Goodrich Co., New York City; William E. Bruyn, L. Littlejohn & Co., New York City; George B. Hodgman, Hodgman Rubber Co., Tuckahoe, New York; William J. Kelly, Poel & Kelly, New York City; Henry Spadone, Gutta Percha & Rubber Manufacturing Co., New York City; Harry T. Dunn, Fisk Rubber Co., Chicopee Falls, Massachusetts; Harvey S. Firestone, ex-officio, Firestone Tire & Rubber Co., Akron, Ohio; Harry S. Vorhis, secretary, New York City.

AUDITING COMMITTEE.

Edward E. Huber, chairman, Eberhard Faber Rubber Co., Brooklyn, New York; William G. Grieb, Ajax Rubber Co., Inc., New York City.

DIVISIONS' MEETINGS.

THE following divisions' meetings were held at the Waldorf-Astoria, January 7:

THE MECHANICAL RUBBER GOODS MANUFACTURERS' DIVISION elected John J. Voorhees, chairman, Voorhees Rubber Manufacturing Co., Jersey City, New Jersey; W. O. Rutherford, vice-chairman, The B. F. Goodrich Co., Akron, Ohio; Harry S. Vorhis, secretary and treasurer, The Rubber Association of America, Inc., New York City. The Executive Committee will be appointed later.

THE RUBBER SUNDRIES MANUFACTURERS' DIVISION elected Frederick H. Jones, chairman, Tyer Rubber Co., Andover, Massachusetts; W. O. Rutherford, vice-chairman, The B. F. Goodrich Co., Akron, Ohio; Harry S. Vorhis, secretary and treasurer, The Rubber Association of America, Inc., and the following Executive Committee: Frederick H. Jones, chairman, Tyer Rubber Company, Andover, Massachusetts; W. O. Rutherford, The B. F. Goodrich Co., Akron, Ohio; George B. Hodgman, Hodgman Rubber Co., Tuckahoe, New York; Edward E. Huber, Eberhard Faber Rubber Co., Brooklyn, New York; Charles J. Davol, Davol Rubber Co., Providence, Rhode Island; Russell Parker, Parker, Stearns & Co., Brooklyn, New York City; Thomas W. Miller, Faultless Rubber Co., Ashland, Ohio.

THE RUBBER RECLAIMERS' DIVISION elected Francis H. Appleton chairman, F. H. Appleton & Son, Inc., Boston, Massachusetts; Clark W. Harrison, vice-chairman, Bloomingdale Rubber Co., New York City; Harry S. Vorhis, secretary and treasurer, Rubber Association of America, Inc., New York City; and the following Executive Committee: E. A. Andersen, Rubber Regenerating Co., Naugatuck, Connecticut; John S. Clapp, E. H. Clapp Rubber Co., Boston, Massachusetts; Rudolph A. Low, United States Rubber Reclaiming Co., Inc., New York City; John S. Lowman, Philadelphia Rubber Works Co., Akron, Ohio; Joseph F. McLean, Pequanoc Rubber Co., Butler, New Jersey.

THE RUBBER PROOFERS' DIVISION elected W. H. Yule, chairman, The B. F. Goodrich Co., Akron, Ohio; William M. Gunlock, vice-chairman, United States Rubber Co., New York City; Harry S. Vorhis, secretary and treasurer, Rubber Association of America, Inc., New York City; and the following Executive Committee: W. H. Yule, chairman, The B. F. Goodrich Co., Akron, Ohio; William M. Gunlock, United States Rubber Co., New York City; George B. Dryden, Dryden Rubber Co., Chicago, Illinois; George E. Hall, Boston Woven Hose & Rubber Co., Cambridge, Massachusetts; C. H. Oakley, Essex Rubber Co., Trenton, New Jersey.

THE RUBBER AND FIBRE SOLE MANUFACTURERS' DIVISION elected C. H. Oakley chairman, Essex Rubber Co., Trenton, New Jersey; William M. Gunlock, vice-chairman, United States Rubber Co., New York City; and the following Executive Committee: C. H. Oakley, chairman, Essex Rubber Co., Trenton, New Jersey; William M. Gunlock, United States Rubber Co., New York City; George E. Hall, Boston Woven Hose & Rubber Co., Cambridge, Massachusetts; George B. Dryden, Dryden Rubber Co., Chicago, Illinois; E. T. Packard, Avon Sole Co., Avon, Massachusetts; Charles Measure, Federal Rubber Co., Cudahy, Wisconsin.

RETIRING BOARD OF DIRECTORS' MEETING.

THE retiring board of directors met at the Union League Club, New York City, January 5, and the following were present: Van H. Cartmell, presiding; W. O. Rutherford, John A. Lambert, Paul W. Litchfield, William J. Kelly, Charles T. Wilson, Charles A. Daniell, J. S. Lowman, William E. Bruyn, Harry S. Vorhis, secretary, and former presidents Augustus O. Bourn and George B. Hodgman.

The acts of the Executive Committee for 1917 were approved, the resignation of Van H. Cartmell as the Association's representative at the National Industries Conference was accepted, and the Committee on Rubber and Kindred Products was enlarged by the appointment of Harry T. Dunn. The following rules and regulations covering arbitrations, formulated by the Arbitration Committee, were approved by the directors:

RULES AND REGULATIONS COVERING ARBITRATIONS OF THE RUBBER ASSOCIATION OF AMERICA, INC.

CONTROVERSIES WHICH MAY BE SUBMITTED TO ARBITRATION.

Any controversy which might be the subject of an action in a court, between persons legally competent to manage their affairs, may be submitted to arbitration except one relating to an estate in real property in fee or for life; but a controversy as to the partition of real property, or as to boundaries, may be arbitrated.

The death of a party to a submission, or the appointment of a committee of his person or property, operates as a revocation of the submission if it occurs before the award is delivered, but not if it occurs afterwards.

METHOD OF SUBMITTING CONTROVERSIES.

If the parties to a controversy agree to submit the matter to arbitration they shall execute a submission in the form hereinafter provided and file a copy thereof with the secretary of the Committee on Arbitration and, at the time of such filing, each party to the submission shall deposit with the secretary the sum of fifty dollars; or

Any party, or parties, to a controversy with others may execute and file with the said secretary a submission in the form hereinafter provided (each party depositing the sum of fifty dollars therewith) and request an arbitration with the other party or parties named in the submission; whereupon the secretary shall notify such other party or parties that such arbitration has been requested and call upon it or them to execute said submission. If executed by such other party or parties, it shall be filed with the secretary, and each such other party shall, when filing the same, deposit the sum of fifty dollars. If the agreement is not executed and filed and the said deposits made by such other party, or parties, within three days after such notice from the secretary, the deposit or deposits made by the party, or parties, requesting the arbitration shall be returned to them together with the submission which has been filed.

All submissions shall be in accordance with "Form A"[1] and shall contain a statement of the matter in controversy in concise but sufficiently comprehensive form to express the nature of the controversy and the points submitted for decision. They shall be duly executed and acknowledged by all parties to the submission before a notary or other official authorized to take acknowledgments of deeds, and, if signed by an agent or by one or more partners, shall be accompanied by duly authenticated power of attorney from the principal of the agent or from copartners not signing the submission.

APPOINTMENT OF ARBITRATORS.

Within three days after the filing of the completely executed submission with the secretary and the depositing of the moneys above provided for, the Committee on Arbitration shall, in writing, in accordance with "Form B,"[1] appoint an arbitrator or arbitrators, and shall at the same time give to the parties to such submission notice in writing of such appointment. The parties may, within two days after the receipt of said notice, forward to the committee written objections to the arbitrator or arbitrators appointed. Within two days after the receipt of the objection to the appointment the Committee on Arbitration shall finally designate the arbitrator or arbitrators and give to the parties written notice of such designation. The above-mentioned periods shall be reckoned exclusive of Sundays and holidays.

[1] These forms may be obtained from the secretary.

HEARINGS BEFORE THE ARBITRATORS.

The arbitrator or arbitrators shall, within three days (exclusive of Sundays and holidays), after their final designation, notify the parties of the time and place of the first hearing, and shall thereafter designate the times and places for all continuances of the hearings, and shall at all times control the manner in which the questions in issue shall be presented.

The arbitrator or arbitrators shall, before hearing any testimony, be sworn in accordance with "Form C"[1] unless the oath is waived by the written consent of the parties to the submission, or their attorneys.

The parties shall be entitled to be heard in person or by counsel, and may produce witnesses for examination; and the arbitrator or arbitrators may, by subpoena, require any person to attend before him or them as a witness, and to bring with him books or papers. A complete record shall be kept of all the proceedings.

All arbitrations in the City of New York shall be held in the rooms of The Rubber Association of America, Inc., which will furnish all reasonable facilities for conducting the arbitration, without charge over and above the fees hereinafter fixed.

The proceedings shall not be made public unless so requested by the parties to the arbitration. But members of the Committee on Arbitration may be present at any of the hearings, and the records shall at all times be open to members of The Rubber Association of America, Inc., and shall also be open to others upon the written order of the Committee on Arbitration.

If there are more than two arbitrators in any case, the decision of the majority shall be the decision in the arbitration, and the majority may adjourn hearings, require the production of witnesses and otherwise do all acts which a sole arbitrator or all of the arbitrators might do in the matter of the arbitration; except that all of the arbitrators must meet together and hear all of the allegations and proofs of the parties.

All awards shall be made in writing and shall be executed and acknowledged before a notary public or other official authorized to take acknowledgments of deeds. An original of the award shall be furnished to each of the parties, and a copy shall be filed in the records of the Committee on Arbitration.

FEES AND EXPENSES OF ARBITRATION.

Each arbitrator shall be entitled to a fee of $10.00 for each case, and to reimbursement for all railroad and hotel expenses when hearings are held outside of the place of residence or place of business of the arbitrator, or when trips away from the place of hearing are required in conducting the arbitration proceedings. Additional fees may be awarded by the Committee on Arbitration in exceptionally protracted or involved arbitrations, not to exceed, in the case of any one arbitrator, ten dollars for each day spent in the business of the arbitration unless, at or before the commencement of the hearing a different rate of compensation is fixed by written consent of the parties.

The Rubber Association of America, Inc., shall be entitled to receive the cost of stenographic notes and transcription thereof and all other of its expenses incurred strictly in connection with the arbitration, together with ten dollars, in addition, for each arbitration.

Each party shall pay all expenses in connection with calling its own witnesses (except the reporting and transcribing of the testimony) but all of the other fees and expenses shall be paid by one or more of the parties, or shared between all of them, as the arbitrator or arbitrators shall decide to be just under the circumstances.

Any unexpended balance of the deposits made at the time of filing the submission shall, upon the completion of the foregoing arbitration, be returned.

APPEALS.

Any one or more of the parties may appeal to the Committee on Arbitration from the decision of the arbitrator, or arbitrators, by giving notice to such committee, in accordance with "Form D,"[1] within five days (exclusive of Sundays and holidays) after receipt of notice of the award in the arbitration, and by paying $100. If more than one party appeals, the said committee shall make such refunds that the committee shall not receive more than $100 for each arbitration and that each appealing party shall pay an equal share of said $100.

Immediately upon the expiration of said period of five days, the secretary of said committee shall notify each party to the arbitration as to the appeals taken and shall, at the same time, fix a date and place for the hearing on the appeal, which hearing shall be upon the record made before the arbitrator, or arbitrators, supplemented by briefs and oral argument if any party so desires.

A majority of the members of the Committee on Arbitration shall constitute a quorum to hear any and all appeals, and each

member who is to hear an appeal shall, before such hearing, be sworn in accordance with "Form C"[1] unless the oath is waived by the written consent of the parties to the submission or their attorneys. All of the members constituting such quorum shall meet together and hear all of the allegations of the parties, and the majority decision of the members hearing the appeal shall be accepted as final by all parties.

The award on appeal shall be made in writing and shall be executed and acknowledged by all of those making it, one original to be furnished to each of the parties and a copy to be filed in the records of the committee.

THE INTENT IN THE ARBITRATIONS.

The arbitrator, or arbitrators, and the Committee on Arbitration, in conducting arbitrations and appeals shall make their rulings, orders and decisions with the end in view of applying reason and enforcing equity and fair dealing in matters of trade and commerce, irrespective of technicalities, and with the least possible delays and expenditures consistent with a comprehensive investigation of each controversy presented.

In case of any question arising as to the interpretation of these rules and regulations, the decision of a majority of the members of the Committee on Arbitration shall be accepted by the parties as final and conclusive.

DUTIES OF SECRETARY.

The duties of the secretary of the Committee on Arbitration (or, in his absence, the assistant secretary of The Rubber Association of America, Inc.) shall be as follows:

He shall receive and file all submissions, all copies of awards, give notice of all hearings and appeals, keep a docket of all cases, and such other books and memoranda as the committee shall from time to time direct.

He shall render all necessary assistance to the arbitrators, attend to their clerical work; receive and disburse all fees and costs and keep careful and accurate account thereof, under the supervision of the Committee on Arbitration.

AMENDMENTS.

The committee reserves full power to amend, add or to omit any of these rules from time to time, as may be found expedient.

EXECUTIVE COMMITTEE MEETING.

THE 1917 Executive Committee met at the Union League Club, New York City, January 5, and elected the following firm and associate members:

FIRM MEMBERS AND REPRESENTATIVES.

Balfour Williamson & Co., D. A. Paterson, 43 Exchange Place, New York.

United Malaysian Rubber Co., Limited, Wm. F. Muller, 2 Rector street, New York.

Whittall & Co., Thomas Dunne, 135 Front street, New York.

The Grasselli Chemical Co., Carroll L. Brandon, 80 Maiden Lane, New York.

ASSOCIATE MEMBERS.

John W. Maguire, The Brunswick-Balke-Collender Co., 623 S. Wabash avenue, Chicago, Illinois.

Eric A. Bishop, Hood Rubber Co., Watertown, Massachusetts.

Alfred G. McDonough, Mitsui & Co., Limited, 25 Madison avenue, New York.

William G. Ruppel, Mitsui & Co., 25 Madison avenue, New York.

WAR SERVICE COMMITTEE.

THE purpose of the War Service Committee is to bring about effective cooperation within the rubber industry and to represent all rubber manufacturers of the country and their allied industries in their relations with the Government during the war. Some of its specific functions are as follows:

To act as a point of contact between the rubber industry and the Government.

To assist the Government in obtaining information as to the capacity of the industry to serve the needs of the Government in carrying on the war.

To supply statistics of all kinds.

To cooperate in the standardization of specifications and products for government use.

To assist in the efficient and speedy production of the Government's requirements.

To put before the Government the needs of the industry at all times.

In order to carry out these functions, sub-committees will be formed, representing the various branches and problems of the industry, among which will be the following: Pneumatic tires, solid tires, mechanical goods, medical rubber goods, boots and shoes, clothing, air craft, gas defense, reclaimed rubber, hard rubber goods, crude rubber and kindred products, foreign trade, supplies, and statistics and reports.

There will be technical committees as well as commercial committees on most of the various subdivisions, to insure the best representative ability of the industry being brought to bear on all problems.

Similar committees have been formed by many of the other large groups of industry in the country.

THE 1918 PRODUCTION OF PLANTATION RUBBER MAY BE CURTAILED.

THE following circular has been sent to all producers of plantation rubber by The Rubber Growers' Association, of London.

His Majesty's Government and Allies are insisting upon a minimum consumption of all sea-borne commodities.

At the recent Inter-Allied Conference in Paris, the Imports Maritime Transports and Supplies Section decided to create an organization with a view, *inter alia*, "to restrict imports in order to release as much tonnage as possible for the transport of American troops."

The concrete effect of this decision has yet to be realized, but the Council feels strongly that it is the urgent duty of the Association to support the Governments in their policy of releasing tonnage for the conveyance of food and troops. It is felt that voluntary action now upon the part of producers may avoid more drastic measures by the Allied Governments, and the Council desires to impress upon the members of the Association and upon rubber growers in general, the urgent need of cooperative action.

The unanimous decision of the Council is that the crop to be collected in the year 1918 should be limited to 80 per cent of that collected in 1917, or in any previous year showing a greater yield, the method of effecting the reduction to be settled individually by proprietors according to the particular conditions of each estate.

In order to meet the case of the young producers, as well as estates giving a low average yield, 200 pounds per acre in bearing during 1918, is to be taken as the standard yield below which no reduction will be required.

You are requested to signify your assent to the proposal by forthwith returning to the Association the attached form duly filled up, and at the same time instructing the managers of your estates to give immediate effect to the reduction agreed upon.

The letter from The Rubber Growers' Association, of London, to the Rubber Association of America, accompanying the above circular, stated that the sole reason for the Council's action is to prevent undue accumulation of shipment of rubber at eastern ports. It is estimated that notwithstanding any regulation of output an ample supply of rubber will be available for all requirements, having in view the modified nature of the demand which is bound to arise from the restrictive action of the Allies.

TOY MANUFACTURERS' ANNUAL MEETING.

At the annual meeting of the Toy Manufacturers of the United States of America held January 10, at the Hotel McAlpin, New York City, the following officers were elected: Harry C. Ives, president, Leo Schlesinger, first vice-president; William Ritchie, second vice-president; A. F. Schoenhut, treasurer; F. D. Dodge, secretary, Flatiron Building, New York City.

[1] These forms may be obtained from the secretary.

Catalysts in Vulcanization.

By D. Spence.

Read before the Rubber Section of the 55th meeting of the American Chemical Society, Boston, September 12, 1917.

WHEN the chairman of this section wrote me asking if I would read a paper on "Vulcanizing Catalysts," to me one of the most fascinating subjects of rubber chemistry, it was with regret I advised him that I would be unable to do so on account of lack of time to prepare a paper. In the meantime, however, I have found an article prepared by me in 1911, but never published, which, together with a few notes prepared on my trip to Boston yesterday, with your permission I will read, as they should clear up some of the points raised in this discussion, and at the same time serve to show the extent to which the investigation of this subject had been carried by some of us prior to 1911, and our knowledge of this subject in America at that date.

This subject is one, which is of particular interest to me, as it has been, I may say, my main field of investigation for the past eight to ten years. During that period, many interesting discoveries have been made, more than one hundred widely different vulcanizing catalysts have been prepared, investigated and put on record, and results of scientific as well as of technical importance have been obtained.

By some of our good friends and allies across the water, jealous of their claims to discoveries along this line, I have been recently criticized for not placing on public record, by patent or otherwise, the results of these past years of investigation, but I am confident that by the time they have carried their studies a little farther, they will appreciate the difficulties involved in the problem, and my reasons for comparative silence. These remarks will, I hope, serve to answer some of their criticism and, at the same time, outline the history of this subject as far as I am concerned.

In the first place, I would point out that, as a matter of fact, discreet mention will be found in some of my earliest published work on vulcanization, of this basic principle, the importance of which our European friends, as well as enemies, have now begun to realize. Thus in an article dealing with the theory of vulcanization[1] and in particular with Axelrod's theory of a varying velocity of reaction with the degree of polymerization of the rubber, I took occasion to point out that *"what Weber, Axelrod, Ostwald and all investigators had overlooked was the fact that the vulcanization of rubber with sulphur as we know it, is essentially a catalytic reaction."* Even earlier, in the controversy between Ostwald and myself in 1910-11, over the chemical *vs.* adsorption theories of vulcanization, which some of you probably remember, it was the knowledge of the true nature of the reaction, overlooked by Ostwald, which led me to take the stand I did. In the "Kolloid Zeitschrift," 13, pp. 270, 271, will be found further reference to this subject, together with figures and curves showing the influence of varying amounts of a powerful catalyst on the rate of vulcanization, as determined by the amount of combined sulphur. That this basic discovery was not made the subject of a patent as Peachey has suggested,[2] may appear remarkable at first thought, but its very breadth rendered patent protection well nigh impossible and disadvantageous to seek. The number of substances which can be used in this connection with more or less success is legion, so that patents such as those which have been granted recently, can be readily overcome, and are of no intrinsic value in any case. By the methods of organic chemistry, all manner of substances can be, and have been prepared, which will be found to accelerate vulcanization, and to bring about the physical result to a greater or lesser extent; simple organic substances widely different in constitution, such as aniline oil, piperidine, diazobenzene, etc., metallo-organic compounds such as alkyl derivatives of lead, and the salts of the fatty acids or of aniline oil, with the alkali metals; then there is the great group of substances which by decomposition, natural or induced during vulcanization, produce some very active and efficient catalysts to which class the thioureas belong. Each of these various classes contains several dozen different representatives, which I have already investigated, and there are doubtless hundreds still to be tested, so that I am sure you will agree with me that the task of adequately protecting an invention of the scope of this one is hard, to say the least, and of doubtful value if attempted. It has certainly not been accomplished so far. In 1911, in an effort to cover by patent the results of past years of research in this line, I set down a description of some of the discoveries made by that time, together with four claims, from which, with your permission, I will read the following extracts. The article is entitled, "Improvements in and Relating to the Vulcanization of India Rubber," and is dated August, 1911. I was surprised, on referring to it again the other day, to find how fully it deals with the subject.

Since the publication of the classical researches of C. O. Weber into the nature of the vulcanization process, this process has been generally regarded as a simple addition of sulphur or sulphur chloride to the rubber hydrocarbon and the practical vulcanization of the rubber of commerce by sulphur has been handled from the standpoint of a simple chemical reaction, as generally understood, between the rubber and the sulphur at the vulcanization temperature. In view of certain difficulties experienced from the earliest of times even to the present day in accepting the simple chemical theory of vulcanization[3] it is therefore the more surprising that what we believe to be the key to successful vulcanization has not been discovered or made known as far as published work shows. The conception of a simple chemical reaction between the rubber and the sulphur at the vulcanization temperature has long been felt to fail to account for certain practical results obtained in vulcanization and only as recently as last year the physico-chemical or adsorption theory of vulcanization was put forward by an eminent authority on the chemistry of rubber on the ground alone that it helped to explain the practical facts of vulcanization better than the simple chemical theory of Weber.

I have cited these facts in order to show that from the earliest days of the industry to the present time what we believe to be the keynote to the vulcanization process as determined by our investigation has never once been sounded.

For the better understanding of the facts leading up to and bearing on the present invention, it is necessary to refer to the following discoveries made by us:

That the vulcanization of pure rubber (by which is meant the rubber of commerce divested of those impurities usually associated with it in greater or lesser amount) by sulphur, is an exceedingly slow reaction. The amount of sulphur which enters into combination with the rubber in a given time is relatively small, and even the best of the products obtained have very poor physical properties, usually deteriorate rapidly and are of little or no industrial value. It has been universally reported that this inferiority of so purified rubber is due to the quality of the rubber *per se* or to changes in the rubber *per se* brought about by the purification process. That this is not correct we have established by experiments in which, by returning to the purified rubber certain of the so-called impurities removed in the first case and investigated by us or by adding to the rubber certain substances having an analogous action in vulcanization, the velocity of vulcanization of the original rubber and the superior physical properties of the vulcanized product were restored.

[1] "Kolloid-Z.," 11 (1912), 275.
[2] "J. Soc. Chem. Ind.," 36 (1917), 321.
[3] Ostwald, "Kolloid-Z.," 6 (1910), 136.

For example, it is known that by dissolving Para rubber in solvents and precipitating the rubber from its solution by acetone or by simple extraction of the rubber by acetone, the vulcanizing capacity of the rubber is greatly reduced, and products with very poor physical properties are obtained. We have discovered, however, that by returning to the rubber certain of the so-called impurities removed in purification, the original vulcanizing characteristics of this rubber are restored.

We have discovered in fact that:

I—The superior qualities of certain raw rubbers with respect to vulcanization are not necessarily due to any superiority in the quality of the rubber itself, but are determined far more by the existence in these rubbers of commerce of certain substances, hitherto regarded as impurities, which are not present in like degree or at all in the other rubbers. These so-called impurities are soluble in acetone and can be extracted in this way. When they are added to rubbers with inferior vulcanizing properties, products which vulcanize rapidly and with superior physical properties are obtained.

II—The acetone extract from Para rubber contains in addition to the resinous impurities generally held to constitute the acetone extract, organic substances, nitrogenous and feebly basic in character, having all the reactions and characteristics of an organic alkaloid.[4] We have found, furthermore, that these organic nitrogenous substances, present in one form or another in Para rubber, impart to this rubber its characteristic vulcanizing properties and are capable of bringing about substantial improvements in vulcanization when added to other so-called low-grade rubbers. These substances which occur in Para and in some other rubbers to a lesser extent we shall call henceforth the "active principle" of raw india rubber. To what extent this "active principle" occurs in Para rubber we have not yet been able to determine, but from calculations made there is probably less than 1/10 of 1 per cent.

III—The function of this active principle quoted in effecting more rapid and better vulcanization of rubber by sulphur is complex but essentially that of a catalyst (as generally understood), accelerating as it does enormously the rate of reaction between the rubber and the sulphur. This has been established by us beyond doubt by comparative curves of the combined sulphur of purified rubber, vulcanized with sulphur only, (*a*) in absence of. (*b*) in presence of the active principle of india rubber, (*c*) in presence of substances having analogous properties.

IV—Organic substances having analogous reactions and properties can be used as catalysts to replace the "active principle" of Para rubber in the vulcanization of india rubber by sulphur. Thus by adding 1 per cent of the well-known alkaloid quinine to a mixture consisting of 100 parts of purified rubber with eight parts of sulphur, the reaction between the rubber and sulphur is so hastened that the time required, using 40 pounds steam pressure, to effect proper vulcanization is reduced from four to five hours when no quinine is present to 25 minutes when quinine is present. The physical properties of the product obtained are likewise improved enormously by the use of this substance as catalyst.

V—The number of organic substances which can be used to replace the "active principle" existing in higher-grade rubbers is unlimited; derivatives of these and metallo-organic bodies may be likewise employed and that although the substances which may be employed may differ widely in chemical composition, they all have the common property of behaving as catalysts in vulcanization, hastening the velocity of reaction by carrying over the sulphur to the rubber at the temperature of vulcanization. We have found, furthermore, that the power which these substances possess as catalysts in vulcanization varies with their constitution and with the nature and arrangement of their reactive groups. We have discovered that it is possible, by suitably modifying the structure of the substance or its reactive groups by the well-known methods of organic chemistry or by suitably modifying the amount of the substance or substances used in vulcanization, to obtain any desired effect. Thus whereas we have found para-phenetidine to be a very powerful catalyst in vulcanization, ortho-phenetidine is but feebly so and the somewhat weak catalytic action of para-amido-phenol is wonderfully increased by converting it into the corresponding amidophenetol. Similarly diphenylthiourea is but feebly active compared with the corresponding tetramethyldiaminodiphenylthiourea.

As examples of organic substances having the power to act directly as catalysts in the vulcanization of india rubber by sulphur, we may mention aniline, para-phenetidine, and piperidine, quinine.

[4] At the time this was written these nitrogenous bodies had not been definitely identified; only their behavior towards the well-known tests for alkaloids had been noted.

As examples of derivatives of organic substances with inorganic radicals and metallo-organic substances acting catalytically in the vulcanization of india rubber by sulphur, we may mention the alkyl derivatives of lead and mercury and the salts of oleic acid with sodium or lead.

As the third class of catalyst in vulcanization we have discovered, furthermore, certain substances which are inactive in themselves, but which at the temperature of vulcanization, it may be alone or it may be in presence of other substances, break down into a substance or substances having the properties of powerful catalysts. As an example of a substance of this kind, we may mention sulphocarbanilide or diphenylthiourea.

What we claim to have discovered is the basic principle of vulcanization of india rubber by sulphur; that the vulcanization of india rubber by sulphur is not a simple chemical reaction as is to-day assumed, but owes its whole success industrially to its catalytic nature.

We are aware of the well-known action of litharge in the vulcanization of india rubber by sulphur. This inorganic substance has been used from the earliest times in large quantities in rubber compounds (up to 40 per cent) and is known to hasten vulcanization. Further we are aware of the use of magnesium oxide as an accelerator in vulcanization and of the work of Weber and of Henriques in this connection. Henriques, as the result of investigations into the inorganic constituents (the ash) of different rubbers, came to the conclusion that it is the presence of compounds of the alkaline earths (inorganic elements, in other words) in quick-curing rubbers, that accounts for the ease with which these rubbers vulcanize. This statement, as far as the literature shows, is still generally accepted as correct, and gave rise, we believe, to the use of magnesium oxide as an accelerator in the vulcanization of rubber by sulphur. We have come to an entirely different conclusion, however, and, although we do not deny the specific results to be obtained by the use of both litharge and magnesium oxide in the vulcanization of india rubber by sulphur, we lay no claim here to the use of any of these inorganic ingredients in vulcanization. We claim, furthermore, that the results obtained by the use of any of these inorganic accelerators in the vulcanization of rubber by sulphur are substantially different from those obtained by the methods of our invention; both these inorganic substances have to be used in large amount to produce any marked result and neither of these inorganic accelerators give the physical properties to the vulcanized rubber possessed by the products of our invention, which is best illustrated by comparative results and by the fact that the addition of the products of our invention to compounds already containing these inorganic substances, causes a still very pronounced improvement in the results of vulcanization.

I will omit the claims at this present time. The article also gives six examples which I have omitted, and defines in full the conditions under which the process may be carried out, and the pros and cons of various classes of reagents. Thus it points out among other things, that some agents are solids, difficult to handle; others yield colored products on vulcanization (nitrosodimethylaniline, for example); others on account of their poisonous character or odor would not be suitable for practical purposes; nor will the methods of application constitute a novelty in connection with discoveries along this line as the description sets forth in detail.

If our friends across the Atlantic should still doubt our claims to priority of discovery of this fundamental principle of vulcanization let them test the validity of their patents, when they will find that the records which I have just cited are a mere indication of the volumes of evidence and facts which can be established to dispose of any claim on their part to novelty of invention, at least as far as America is concerned. As far as the specific claim to the use of *p*-nitrosodimethylaniline is concerned, let me assure Mr. Peachey that when he is ready, I am prepared to demonstrate through several different sources that this material was tried out both scientifically and industrially in this country even as early as 1910, and was long ago abandoned on account of the serious disadvantages of its extensive use. I recall, indeed, having used it in one instance in the preparation of rubber stoppers to be used in the laboratory, but with unfortunate results. It is a substance which I should not think of employing industrially now, as there are so many objections to its use.

In conclusion I will say that a good reagent in this connection must intensify not merely the chemical process of vulcanization, but also the physical; it should toughen the rubber, whether raw or vulcanized, and should render it immune to deterioration. All this has already been achieved in America, and the preparation of rubber far superior to the best natural rubber is now a matter of daily routine; the preparation of a "noble rubber," like the "noble" alloys, has indeed been accomplished.

THE SOCIETY OF AUTOMOTIVE ENGINEERS.

AT the annual meeting of the Society of Automotive Engineers, held on January 10 in New York City, during New York Automobile Show Week, Charles B. Whittelsey, vice-president of the Hartford Rubber Works Co., Hartford, Connecticut, was elected treasurer.

The other officers were elected as follows: president, Charles F. Kettering; first vice-president, David Beecroft; second vice-presidents, C. C. Hinkley, George H. Houston, Fred Glover, Henry R. Sutphen and H. R. Brate; secretary-general manager, Coker F. Clarkson.

Councillors, 1918: B. B. Bachman, H. L. Horning, C. W. McKinley, George W. Dunham and Russell Huff.

Councillors, 1919: Charles S. Crawford, Charles M. Manly and J. V. Whitbeck.

Membership in the S. A. E. has increased to a total of 3,119, or 47 per cent, during the past year. More than 125 members are now commissioned officers in the United States forces and as many more are serving the nation in civilian capacities. So great has been the increase in its activities of late that the S. A. E. has been obliged to take over the entire sixth floor of the Engineering Societies' Building in New York City, where it started in only a corner room a few years ago.

The banquet of the S. A. E. at the Biltmore was the biggest event of the New York Automobile Show Week, no fewer than 1,000 men being in attendance. It was a patriotic affair, the speakers devoting themselves chiefly to the important part the S. A. E. is playing in the design of automotive products of military character for the Government.

AERONAUTICS DIVISION S. A. E. GASOLINE HOSE SPECIFICATIONS.

TYPE NO. 1, RUBBER TUBE.

CONSTRUCTION.—The gasoline hose must consist of rubber and cotton constructed in the following manner: The quality of the finished hose must be uniformly good throughout.

INNER TUBE.—The inner tube is to be made of rubber free from flaws or cracks and of a quality conforming to the conditions laid down in this specification. When of an internal diameter of ¾ inch or less, the inner tube must be seamless. Tubes of larger internal diameter may be made from sheet rubber consisting of at least two complete layers and be formed into a complete tube in the further process of manufacture.

COTTON PLIES.—The cotton shall consist of either braided or canvas plies and shall comply with the following table:

Internal Diameter of Hose, Inches.	Number of Plies.
Up to 5/8	Not less than two
11/16 to 1½	Not less than three
Greater than 1½	Not less than four

OUTER COVER.—An outer cover is to be made of rubber of the same quality as that used for the inner tube, and of good workmanship and finish.

DIMENSION LIMIT.—The internal diameter of the hose must not vary more than plus or minus 3 per cent of the internal diameter stated on the order.

LENGTH OF HOSE.—The contractor, when quoting or when acknowledging an order for this class of hose, must state the lengths in which it can be supplied. The hose should be supplied in the maximum possible lengths.

FLEXIBILITY.—By "flexibility" is meant the capacity to bend without kinking. When hose of internal diameter Y (see table) is bent around a cylinder equal to X times the external diameter of the hose, the external diameter of the hose must not increase or diminish by more than 10 per cent.

Internal Diameter of Hose Y	X
Less than ½ inch	8
½ to ¾ inch	12
13/16 to 1⅛ inch	14
Above 1⅛ inch	16

The hose, after having been filled with gasoline for two hours, must withstand a minimum internal hydraulic pressure of P pounds per square inch (see table), depending upon the internal diameter D of the hose, without showing defects.

Internal Diameter, D, inches.	Minimum Pressure, P, Pounds per Square Inch.
Up to ½, inclusive	160
9/16 to 1, inclusive	140
1 1/16 to 1½, inclusive	120
1 9/16 to 2, inclusive	100
Above 2, inclusive	80

RUBBER.—If organic matter other than Para or plantation rubber is used in the preparation of this hose, the amount and identity of such material shall be stated. The percentage of rubber shall not be less than 25 per cent. The amount of free sulphur in either the tube or the cover shall not exceed 1 per cent.

DRY HEAT TEST.—A 3-inch piece of hose, after having been placed in an air oven at 132 degrees C. for two hours, must show, when cool, no tendency to crack, and must not be "tacky."

THE MOTOR AND ACCESSORY MANUFACTURERS' ASSOCIATION.

AT the annual meeting of the Motor and Accessory Manufacturers' Association, held in New York City on January 9, E. H. Broadwell, vice-president of the Fisk Rubber Co., of Chicopee Falls, Massachusetts, was reelected second vice-president and a director, and W. O. Rutherford, general sales manager of The B. F. Goodrich Co., of Akron, Ohio, was elected secretary and assistant treasurer.

All of the other officers were reelected, as follows: president, C. W. Stiger; first vice-president, C. E. Thompson; third vice-president, T. J. Wetzel; treasurer, L. M. Wainwright.

In addition to Mr. Broadwell, three other retiring directors were reelected, as follows: L. M. Wainwright, Christian Girl, E. W. Beach.

The fourteenth annual banquet which followed at the Waldorf-Astoria was attended by over 500 members and guests. It consisted of a combined dinner, vaudeville performance, war lecture and motion picture entertainment of patriotic character intended primarily to show the achievements of automobiles, motorboat submarine chasers and airplanes in the war.

The annual Automobile Salon held at the Hotel Astor, New York City, preceding the automobile show, was patronized by many interested visitors. There were about twenty exhibitors in all, including car and accessories manufacturers.

During automobile week the tires made by the Miller Rubber Co., Akron, Ohio, were exhibited at the Biltmore Hotel, New York City.

The Norwalk Tire & Rubber Co., Norwalk, Connecticut, had a tire exhibit at the Biltmore Hotel, New York City, during automobile week.

The New York Automobile Show.

THE keen interest shown by the public in the eighteenth annual automobile show that was held at the Grand Central Palace, New York City, January 8 to 12, emphatically dispelled all doubts concerning 1918, thus forecasting good business prospects for the great automobile industry during the coming season.

The wartime spirit was shown in the general decorations that consisted of flags and panels representing the war colors of the Allies. The main floor was decorated with brilliant stands of colors of all the allied nations, and mural paintings of American soldiers at the front emphasized the patriotic sentiment of the decorative display.

The automobile exhibits, occupying the main floor, the second floor and part of the third, were representative of the best and newest products of the industry. The designs of the various cars exhibited ultimate refinement in power plant and body construction rather than novelty, and reflected the marked progress toward perfection attained by American manufacturers during the past year.

The accessories and parts exhibits occupied the entire third and fourth floors, where the desire of the visitors to see and learn was exceeded only by the willingness on the part of the exhibitors to show their goods. Among the principal exhibits of interest to the rubber trade were the following:

"Our Deliverance," a Patriotic Mural Decoration at the New York Automobile Show.

TIRES, TUBES, ETC.

The tire equipment represented many of the best-known makers of pneumatic and solid tires, those most prominent being Ajax, Firestone, Fisk, Goodrich, Goodyear, Miller, Pennsylvania and United States.

The Amazon Rubber Co., Akron, Ohio, exhibited its supertires with both the non-skid and ribbed tread, guaranteed for 5,000 miles. The laminated inner tubes manufactured by this company were a feature of the display.

The Armstrong inner tube equipped with the Kahn automatic valve was exhibited by the Armstrong Rubber Co., Inc., Rochester, New York. The Kahn valve shows just how much pressure there is in the tire, thus making it impossible to overinflate, as it whistles when the proper air pressure has been reached.

The large line of automobile accessories manufactured by the Essex Rubber Co., Inc., Trenton, New Jersey, attracted much attention and favorable comment. At this exhibit were shown the Essex inner tube, known as the Master red tube, and also the blow-out patches and reliners which are well-known specialties of this company. The exhibit included the various types of radiator hose and pump tubing, brake lining, Ford transmission sets, mats, and gas-engine packing in both red and black. Here were also displayed a complete line of rubber cements that included vulcanizing cements, combination cements, patching cements and wood-rim cements. Other specialties, including rubber spring bumpers, both oblong and round, of three sizes, small, medium and large; tire talc; matting; rubber goggles, both red and gray; reliners; tire plaster; lamp connections and wind-shield rubber, were interesting features of the Essex exhibit.

The Keystone Rubber Manufacturing Co., Erie, Pennsylvania, manufacturer of reliners, inner tubes, packing and mechanical rubber goods, exhibited its full line of rubber automobile accessories. These included the Keystone tube that is made in red or gray; the Keystone non-cement patches that are packed in flat manila envelopes or cans so that the motorists may keep them in their pockets or under the cushions for use in an emergency. No cements or acids are required and a puncture may be easily and quickly repaired by a novice. In addition were shown the Keystone-Imperial outside tire boot in both the lace-on and hook-on style, also Imperial reliners, and blow-out patches that are manufactured by the Keystone company. A novel specialty, the Keystone vulcanizing fluid, is offered to the repair man for use in repairing hot-water bottles, boots, etc., by the acid-curing processs. This fluid is put up in bottles with patented stopples.

The Sterns Tire & Tube Co., St. Louis, Missouri, exhibited the Sternwear reinforced inner tube that consists of a heavily built, reinforced fabric. The extra thickness of the tube and the fabric protection are the features of this tube that is designed to prevent punctures and blowouts.

An inner tube, known as the Bonner tube, was shown by Ernest D. Story, New York City. This tube, due to its construction, is claimed to be self-healing and therefore puncture-proof.

The Voorhees Rubber Manufacturing Co., Jersey City, New Jersey, had a large and comprehensive display of the standard goods and automobile specialties made by the company. Here were shown the Ideal red inner tube and the Viking gray inner tube, inner sleeves, reliners and outside boots of the well-known Voorhees brand. There were cementless patches, fabric patches, valve bases of rubber, as well as vulcanizing gums, cements, and rebuilding fabrics widely used in tire repairing. The Voorhees lines of pure gum tubing, air hose, both plain and armored, were shown, as well as various other specialties, such as rubber bumpers, mallets and valve washers, packing, etc., manufactured by this company.

ACCESSORIES AND REPAIR DEVICES.

The Adamson Manufacturing Co., East Palestine, Ohio, maker of repair vulcanizers of all sorts, exhibited its full line of machines and tire repair specialties. Here were to be seen Model U vulcan-

ner for tubes and casings, Model T for inner tubes only, and the Model E 5-minute vulcanizer. For private garages and repair shops, Model S is recommended, and for motorcycle and bicycle tire repairing, the Model F is provided. All these vulcanizers are absolutely automatic in operation and require no attention other than to apply the patch, attach the vulcanizer and light it.

The Coffield tire protector is an all-rubber band, vulcanized in one continuous piece, and is placed between the casing and the tire without being glued, cemented or vulcanized at any point. This device is intended to resist punctures and eliminate tire troubles.

The Eastern Rubber Co., Philadelphia, Pennsylvania, maker of Magic rubber mend, demonstrated this product and its usefulness in actual practice. It is recommended for repairing rubber boots, rubber shoes, hot-water bottles, rubber cloths, hose, blankets and in fact any other article made of soft rubber; also for tube splicing and for use in the application of new valve pads. Moreover, as a material with which to repair quickly tires, such as small punctures, cuts, or blisters of casings and inner tubes, it has obvious advantages. The material is supplied in cans in the form of a black gum that is applied to the repair with no other tools than the fingers and vulcanizers without the aid of applied heat.

The Essenkay tire filler, a substitute for air in tires, exhibited by the Essenkay Products Co., Chicago, Illinois, is a brown, flexible, highly resilient material that occupies the casing in place of the ordinary inner tube. It is obvious that by the use of this material punctures, blow-outs, and rim cuts will be eliminated and a much longer period of wear obtained from tires thus equipped.

The specialties of A. Schrader's Son, Inc., Brooklyn, New York, were exhibited in well-arranged cases and attracted much attention. The Schrader Universal tire-pressure gage, the Schrader pump connection and Universal valve were here exhibited, together with the Schrader Universal valve repair tool that is adaptable for rethreading the valve-cap thread, refinishing the top of the valve stem, rethreading the inner thread of the valve and removing the valve inside of the valve stem. A modification of the standard tire-pressure gage to make it adaptable for pneumatic tires on heavy vehicles, such as motor trucks and fire apparatus, was also shown. This consists of the standard gage fitted with an angle foot and indicating sleeve calibrated from 40 to 170 pounds, thus providing a gage for measuring the pressure in truck tires as large as 8½ inches. If required, the indicating sleeve may be calibrated to 200 pounds.

C. A. Shaler Co., Waupun, Wisconsin, maker of tire repair vulcanizers, both gas and electrically heated, exhibited a full and comprehensive line of Shaler specialties. Among these were the Shaler gasoline vulcanizer and the portable electrical vulcanizer for home use. Ford-Kit, Tube-Kit and the Ford Tube-Kit gasoline or alcohol vulcanizers were also shown. The new Shaler 5-minute vulcanizer consists of a metal container for holding the combustible disk which furnishes the heat. This unit is clamped over the puncture and the combustible disk lighted, thus creating just the amount of heat to vulcanize the repair. The outfits, including clamp, 12 patches and heat units, and sandpaper, are conveniently carried in the tool box.

MISCELLANEOUS ACCESSORIES AND EQUIPMENT.

Another new device shown was the Common-Sense shock absorber manufactured by the Common-Sense Manufacturing Co., Newark, New Jersey. This is a simple and efficient shock absorber that is easily applied to any car, the strap that passes between the snubbing device being made of frictioned belting material.

The Tungar rectifier for charging, starting and lighting batteries in the home garage was shown in the booth of the General Electric Co., Schenectady, New York. This device will charge one 3-cell, two 3-cell, or one 6-cell battery at six amperes. The Tungar rectifier for public garages and battery charging stations will charge any number of cells from 3 to 30 at six amperes. Motor generator sets for charging ignition batteries were also shown.

Silent chains are now generally used in modern motor construction, and the Morse Chain Co., Ithaca, New York, offered a very practical exhibit showing the use of silent chains in satisfactorily solving the difficult driving problems presented by several well-known motors. Here the silent chain was used on the front end of the motor for driving the cam-shaft and the accessory shaft and providing an effectual substitute for the usually noisy and troublesome gears. The principle of the frictionless "Rocker-Joint" used in the Morse chain construction was clearly demonstrated, and the Morse adjustable sprocket used for taking up the slack in the chain was another interesting feature.

L. J. Mutty Co., Boston, Massachusetts, manufacturer of high-grade automobile rubber cloths and fabrics, exhibited large samples of the various goods made by this company for the trade. Included in the great variety of samples shown that are now most popular for automobile tops, seat covers and upholstery, were Dridek leather and rubber finished materials.

Raybestos brake-lining with the silver edge, guaranteed for one year, was exhibited by the Raybestos Co., Bridgeport, Connecticut. Here also was to be seen the Raybestos brake-lining for Ford transmissions that is recommended to the trade as an article of quality. This company also makes external emergency brakes for Ford cars, consisting of two duplex contracting brakes, 8¼ by 1¼ inches, lined with Raybestos, and two supporting fixtures, together with the necessary pull rods and clamps to attach the device properly.

The H. C. Rich Auto Accessories Co., New York City, exhibited the Rico Ford pedal covers of soft rubber for attachment to the pedal by means of a metal plate having eight prongs which are bent over the pedal, holding the pad firmly in place.

Rubber pedal pads of great variety were exhibited by the George H. Rives Manufacturing Co., Inc., New York City. Eleven designs were shown that were made of high-grade white rubber, adaptable to the pedals of all sorts of cars. These pads are provided with metal clips, enabling one to make quick and permanent attachment to the pedal, so that the foot of the motorist is prevented from slipping, and serious accidents are thereby avoided.

Among the prominent new devices shown, in which rubber is used, the Prest-O-Grip anti-skid chain for all makes and sizes of solid tires, single and dual, was of interest. In these grips rubber packing is used on the inside of the clamps which permit the attachment of this device to the wheels. The maker is the Rowe Co., Plantsville, Connecticut.

At the exhibit of the Woodworth Manufacturing Corp., Niagara Falls, New York, makers of motor car accessories, a spring lubrication device of interest was noticed. It is a spring cover and lubricator, made of imitation leather, oil- and water-proof, and lined with a felt wick. The cover is laced over the spring, completely enclosing it, and the felt lining, being saturated with oil, will effectively lubricate the spring. Among other accessories shown at this booth were the Woodworth trouble-proof tires that are provided with a puncture-proof strip of chrome leather on the inside of the shoe. This firm also manufactures steel-studded leather overshoes that are attached to the rim with flat steel hooks and are claimed to be puncture-proof. Other accessories made by this company include fan belts, tire boots and inner sleeves.

STORAGE BATTERIES.

Among the manufacturers of storage batteries and accessories used in their operation, in the construction of which hard rubber parts are used, the following were represented:

Electric Storage Battery Co., Philadelphia, Pennsylvania; Gould Storage Battery Co., New York City; Willard Storage Battery Co., Cleveland, Ohio.

What the Rubber Chemists Are Doing.

THE OXIDATION OF RUBBER.

IN the "Journal of the Society of Chemical Industry," December 15, 1917, Messrs. S. J. Peachey and M. Leon discuss their researches on the oxidation of rubber. Their methods and results are given in outline as follows:

One of the authors in 1912 described a form of apparatus for carrying out quantitative investigations on the aerial oxidation of rubber. A series of experiments on carefully purified rubber showed: (1) that the reaction between rubber and oxygen, ordinarily so slow as to be almost imperceptible, becomes sufficiently rapid at 85 degrees C. to render possible direct observations on the volume of gas absorbed; (2) that the presence of a nominal amount of resin (about 3 per cent for the type of rubber employed) exerts a marked retarding effect on the rate of oxidation; (3) that the amount of oxygen ultimately taken up by the unit molecule of rubber corresponds closely to four atomic proportions.

In the earlier experiments a weighed quantity of raw rubber freed of resins and proteids was deposited in a thin film on the interior surface of a flask connected with a measuring burette containing mercury, the whole apparatus being filled with a known volume of moist oxygen. The flask was heated in a water-bath at a constant temperature of 85 degrees C., and the volume of oxygen absorbed was periodically measured as long as absorption took place.

In order to ascertain whether either the speed of the reaction or the amount of oxygen ultimately taken up was influenced by the presence of moisture, parallel experiments were carried out, using carefully dried oxygen. The same arrangement of apparatus was employed but the oxygen was thoroughly dried by passing through tubes containing solid potassium hydrate and phosphorous pentoxide, respectively. The film of rubber was also dried *in vacuo* over phosphorous pentoxide.

It was found that in these circumstances the rubber underwent oxidation at practically the same rate as when moist oxygen was employed and that the amount of gas taken up was very nearly the same in either case. It appears, therefore, that the presence or absence of moisture exerts no appreciable influence on the course of the reaction. Examination of the gas remaining in the flask after the completion of the oxidation revealed the presence of an appreciable and somewhat variable amount of carbon dioxide which appeared to be a normal product of the oxidation. From experimental data the authors conclude that during the oxidation of a molecule of rubber approximately one quarter of an atomic proportion of carbon was converted into carbon dioxide. The carbon dioxide being formed from its own volume of oxygen, it follows that the amount of oxygen acting was somewhat greater than that which was absorbed and which was contained in the resinous oxidation products.

Experiments were carried out to determine the action of oxygen on a thin film of vulcanized rubber. Suitable quantities of a solution of raw rubber in benzene and a standard solution of sulphur in the same solvent were run into the flask which was then slowly rotated while the solvent was evaporated in a current of air. The film was dried *in vacuo* and vulcanized by immersion of the flask in an oil bath heated to 140 degrees C. for two and a half hours.

The vulcanized film was subsequently oxidized and its complete oxidation required nearly 800 hours, whereas a similar film of raw rubber (containing its natural resin) requires only 100 hours.

Similar experiments with purified balata appear to indicate that the oxidation of balata differs from that of rubber in that five atoms of oxygen are absorbed during the oxidation of a molecule of the hydrocarbon; in other words, the resinous products of the oxidation of balata collectively contain an atom of oxygen more than those formed from rubber. Further, the amount of carbon dioxide produced corresponds with the oxidation of one-third of an atom of carbon per unit molecule of balata entering into the reaction as against one-fourth of an atom in the case of rubber.

By a tedious process of distillation and exhaustive treatment with solvents four substances were ultimately separated. These were: (a) a yellow viscid resin of neutral character, insoluble in water, but soluble in all the common organic solvents and agreeing in composition with the formula $C_{10}H_{28}O_3$; (b) a fawn-colored amorphous solid, insoluble in water and light petroleum, but soluble in most organic solvents, possessing an acid character and agreeing in composition with the formula $C_4H_9O_2$; (c) a brown amorphous substance, insoluble in water and organic solvents, but soluble in dilute alkalis, its composition approximating that required by the formula $C_{11}H_{16}O_4$; (d) a reddish amorphous substance, insoluble in water, alkalis and organic solvents and agreeing in composition with the formula $C_4H_9O_2$.

RESEARCHES ON THE VISCOSITY OF RUBBER SOLUTIONS.

GENERAL CONSIDERATIONS.

IN the communications of the Netherlands Government Institute for Advising the Rubber Trade, Dr. A. Van Rossem, director of the Institute, has compiled an extended report on the determination of the viscosity of rubber solutions.

Following the example of many individual investigators the Institute has occupied itself with measuring viscosity, trying to find the best method, and studying the many factors which are of influence during the test. Hatschek's mathematical theory for the viscosity of emulsoids is briefly discussed, followed by mention of the different methods of measuring viscosity practiced by various investigators in this field. In the matter of indicating the viscosity, J. G. Fol expresses its value by the "viscosity number," defined as the area limited by the viscosity curve, the coordinate axes and the ordinate at a concentration of one per cent. Gorter has shown that the calculation of the relative viscosity, by dividing the time of running of the rubber solution by that of the solvent (benzene) as was proposed by Fol, is too low by 12 per cent. This is caused by the viscosity of benzene being so small that the equation giving the viscosity constant becomes a different one for benzene from that for rubber solutions. Gorter proposed to indicate the viscosity by the "viscosity index" in place of the "viscosity number." This viscosity index is the logarithm of the relative viscosity of a solution of one per cent. It is perfectly clear that it is equally right to use the viscosity number and the relative viscosity at a definite concentration, as the indication for the viscosity, for both are equally good as criterions for the viscosity curves. In order to obtain reliable figures, it is necessary to choose the relative viscosity of a solution of one per cent, the highest concentration which can be used for this purpose. Consequently the determination of the viscosity is reduced to making one test of the relative viscosity with a solution of arbitrary concentration.

Van Rossem has calculated, from a large number of experimental results, the average viscosity numbers belonging to the relative viscosities of one per cent solutions with the values 19.5, 29.5, 39.5, 49.5, 59.5, 69.5 and 79.5, and from this data has prepared a set of standard viscosity curves.

DETERMINATION OF VISCOSITY.

The measurement of viscosity as carried out at the Institute is thus described:

An average rubber sample is cut up finely and about one gram is weighed and put in a brown bottle, to which is added 100 c.c.

of chemically pure benzene (boiling point 80 degrees C.). The bottle is shaken with a machine till all the rubber is dissolved, or if this does not take place, till at least 80 per cent is dissolved. It is filtered through glass or cotton wool and the time of flowing through the capillary is taken in diffused light with the Ostwald capillary viscosimeter of "standard dimensions." The first reading is adopted in the calculations; a second one follows to trace any grave errors in the first; this one should give only a trifle lower result than the first. The time of running divided by that of pure benzene furnishes the "relative viscosity." The concentration of the solution is then determined by evaporating 25 c.c. in a previously weighed dish. On the chart of standard viscosity curves one locates the point corresponding with the calculated relative viscosity and the concentration found, and if this point is not already on one of the curves a new curve is inserted between the existing ones, which can be done without difficulty by hand. The value of the relative viscosity at a concentration of one per cent is then read off on this curve. From the standard curves the viscosity number can then be found.

Concerning the many factors of influence during the test the following points may be summarized.

The "constant of viscosity" of a rubber solution is, apart from the temperature, dependent on the nature of the solvent, as well as on the dissolved material, and on the concentration. To compare the properties of rubbers according to their viscosity, the solutions must be made with the same solvent and at identical concentrations. As a means of differentiating rubber values the correspondence of results is considered for the same series of samples as regards the influence of other concentrations, other solvents and the personal factor.

INFLUENCE OF MOISTURE AND ACID ON VISCOSITY.

Usually, neither the raw rubber nor the benzene used for measuring the viscosity are carefully dried. Experiments made by the Institute proved, however, that care in this respect has to be taken. With absolutely dry benzene a slightly lower viscosity is obtained than with ordinary benzene, which always contains some moisture.

Investigations on the action of small quantities of acid on the viscosity of rubber made by the Institute have fully confirmed its great influence. From considerable data no relation could be found between the degree of acidity and the viscosity of sheets and crêpes. This does not alter the fact that in any case it is advisable to use for the viscosity measurements a solvent which is perfectly free from acid. For this reason chloroform, trichlorethylene and other liquids which by decomposition easily yield traces of acids, must be considered unsuitable for this purpose.

INFLUENCE OF INCOMPLETE SOLUTION ON VISCOSITY.

By fractionally dissolving rubber in benzene, Stevens obtained fractions showing a different viscosity and attributed this difference to a decreasing percentage of resin in the fractions, as resin is more readily dissolved than rubber. Investigations by Van Heurn show that there is an important difference between the viscosity numbers of fractions most rapidly dissolved and those more slowly dissolved. There may be three causes for this:

1. The resins have a lowering influence on the viscosity and dissolve more readily. This difficulty is avoided, when making the solution, by shaking with benzene so long that nothing more is dissolved.

2. On continued shaking, nitrogenous compounds often disappear from the insoluble part and are brought into "solution" by the protective action of the rubber solution. The viscosity number may rise in consequence.

3. It is conceivable that the caoutchouc hydrocarbon consists of several polymers which dissolve with greater difficulty and possess a higher viscosity number in ratio to their molecular weight. It is obvious that if this conception is right, this occurrence must be very unfavorable for the measuring of the viscosity. For, in that case, one could never obtain a precise idea of the viscosity when the rubber does not dissolve completely, and the viscosity number would therefore lose its value for the study of most Para rubbers, many sheets, and some crêpes.

It is evident from the preceding that on making viscosity measurements the greatest possible part of the rubber must be dissolved, but when this does not completely succeed a conclusion may be drawn from the viscosity number with a certain amount of reserve (caution).

INFLUENCE OF NATURE OF SOLVENT ON VISCOSITY.

The influence of benzene, toluene and carbon tetrachloride has been studied, and from the results obtained the following conclusions were reached:

1. The quotient of the relative viscosities of various rubbers for two different solvents is not constant.

2. This ratio is higher with rubbers of high viscosity than with those of low viscosity.

3. The ratio seems to increase in proportion to the increase of the viscosity of the rubbers.

From this is shown the great importance of different investigators using the same solvent for viscosity measurements in order to obtain results that will bear comparison.

INFLUENCE OF RESIN COMPOUNDS ON VISCOSITY.

Various tests have been carried out on the influence of the resin compounds on the viscosity of the rubber solution. In this connection attention is called to the work by Axelrod and by Schidrowitz. The latter concluded that, in general, deresination causes increase in the viscosity. Fol, on the other hand, came to the conclusion that for *Castilloa* rubber, deresination sometimes causes an increase, and in other cases a decrease in the viscosity. He was, however, able to prove that there were two circumstances which had to be taken into account, namely, by removing the resin the viscosity is increased, but heating during the extraction causes it again to be decreased. The final result must, therefore, be taken as the effect of the two actions combined. Van Heurn confirmed this for Congo.

IMPORTANCE OF VISCOSITY MEASUREMENTS.

Van Heurn proved the important fact that there exists almost a direct proportion between the breaking load of raw rubber and the viscosity number, and the results of his experiments also justify the conclusion that direct proportion exists between the viscosity of a raw rubber and its tensile strength.

Thus the viscosity number offers a direct measure for the mechanical properties of raw rubber.

Although the measurement of the viscosity must be an excellent way of judging rubber, when not used in the vulcanized state, it is not to be assumed that the viscosity gives an insight as to the behavior during vulcanization, or as to the properties of the vulcanized product. Such a conclusion could be justified only by special investigation.

The Institute published in 1914 a paper in which is shown that when vulcanizing in a constant way there exists a close relation between the coefficient of vulcanization and the viscosity number and also between this number and mechanical properties after vulcanization.

The value of these correlated coefficients leads to the conclusion that in general a high viscosity number of raw rubber points to a high coefficient of vulcanization and therefore to good mechanical properties after vulcanization during one and one-half hours, using seven and one-half per cent of sulphur. Hence the viscosity number is, in the main, a measure for the velocity of vulcanization, and this confirms a supposition often expressed in literature.

This reservation should be made—on the addition of "artificial catalysts" entirely different results will be procured. It is not to be concluded that it is really the grade of polymerization of the caoutchouc molecule which determines the velocity of vulcanization. For the possibility is not excluded that high viscosity in itself is an indication for other circumstances which increase the velocity of vulcanization, and that this high viscosity is a

secondary occurrence, unimportant in itself for that velocity. However, it has been shown that viscosity measurements are a valuable expedient when valuing raw rubber. More particularly on the plantations, where this valuing cannot easily be based on the behavior during vulcanization, the determination of the viscosity can supply important indications for the quality of the product. It should also be noticed that with the settlement of the relation between viscosity and mechanical properties on the one hand, and the correlation between viscosity and behavior on vulcanization on the other, the empirical way of judging as to the mechanical "nerve" of the rubber becomes justified to a certain extent.

SWELLING OF RUBBER IN DIFFERENT LIQUIDS.

A few tests on this subject have been carried out by the Institute, but the method of carrying out the swelling test has not yet been worked out sufficiently. From preliminary tests it may be concluded that there exists a parallelism between viscosity and swelling as valuation methods, which, however, follows more particularly from experiences gained with other colloidal substances.

CHEMICAL PATENTS.

UNITED STATES.

OCOTILLO GUM SOLUTION.—A composition of matter including commercial ocotillo gum and an aqueous solution; also the same in acid solution. [Jefferson D. Crawford and Joseph Hughes, San Francisco, California, assignors to Cactus Rubber Gum Co., Phoenix, Arizona. United States Patent No. 1,249,034.]

VULCANIZING RUBBER AND PRODUCTS OBTAINED.—A process for treating rubber or similar material, comprising the addition of an organic nitro-compound to the rubber and vulcanizing by the action of this compound. [Iwan Ostromislensky, Petrograd, Russia, assignor to New York Belting & Packing Co., New York city, United States Patent No. 1,249,180.]

VULCANIZING RUBBER AND PRODUCTS OBTAINED.—A process for treating rubber or similar material, comprising the addition of benzoyl peroxide to the rubber and inducing vulcanization to take place under the action of this material. [Iwan Ostromislensky, Petrograd, Russia, assignor to New York Belting & Packing Co., New York City. United States Patent No. 1,249,181.]

VULCANIZING RUBBER WITH SELENIUM.—The process comprises incorporating with the rubber a quantity of selenium or its compounds prior to or during vulcanization, together with an artificial accelerator, such as beta-naphthylamine. [Charles R. Boggs, Arlington Heights, Massachusetts, assignor to Simplex Wire & Cable Co., Boston, Massachusetts. United States Patent No. 1,249,272.]

PROCESS FOR LEATHER-LIKE MATERIAL.—The method consists in boiling linseed oil and calcium rosinate to gelatinous consistency, then compounding with American ochre and iron oxide, impregnating fibrous material with this compound, and finally oxidizing it. [Albert G. Emery, New York city, assignor to Rubber Regenerating Co., Naugatuck, Connecticut, United States Patent No. 1,249,360.]

SOLE COMPOSITION.—A mixture of crude rubber, ground vulcanized rubber scrap or ground vulcanized scrap friction fabric, sulphur and an alkali in specified proportions. [Russell D. Belden, Akron, Ohio, assignor to The Miller Rubber Co., Akron, Ohio. United States Patent No. 1,250,418.]

ORNAMENTING RUBBER ARTICLES.—The process consists of dipping the article on its form in a rubber solvent to distort the surface by forming porous ridges upon it when still on the form. Then immersing the article in a coloring solution to allow the porous portions to absorb more of the coloring solution than the remaining portions, which remain tight to the form. [Frank J. Creque, Cuyahoga Falls, Ohio. United States Patent No. 1,251,182.]

CANADIAN.

VULCANIZING PROCESS AND COMPOUND. Treating rubber by the addition of a vulcanizing agent containing oxygen (mono-cyclic aromatic nitro-compound) in the presence of a metallic oxide (litharge) and of a nitrogenous anti-aging material (aromatic amine). [William E. Lake, New York City, New York, assignee of Iwan Ostromislensky, Petrograd, Russia. Canadian patent No. 179,352.]

VULCANIZING PROCESS AND COMPOUND. A process for treating rubber, comprising the addition of sulphur, an organic dye normally injured by sulphur under vulcanizing, an agent adapted to prevent such injury, and a metallic oxide serving as an accelerator and inducing vulcanization. [The Canadian Consolidated Rubber Co., assignee of William E. Lake, New York City, New York, assignee of Iwan Ostromislensky, Petrograd, Russia. Canadian patent No. 179,353.]

VULCANIZING PROCESS AND COMPOUND. Treating rubber with a vulcanizing dye containing a nitro-group in the presence of lead oxide and naphthylamine. [William E. Lake, New York City, New York, assignee of Iwan Ostromislensky, Petrograd, Russia. Canadian patent No. 179,379.]

LABORATORY APPARATUS.

THE MACMICHAEL VISCOSIMETER.

IN the MacMichael viscosimeter a disk is suspended in a cup of fluid. The force exerted by the rotation of the fluid on the plunger is measured. This force is equal and opposite to that applied to the cup. In operation the disk is suspended in the cup of fluid by a torsion wire about 10 inches long running down through the stem of the plunger and fastened near the bottom. The cup and plunger may be removed and replaced without manipulating any catches or fastenings. The cup is oil-jacketed, being formed of two pieces of heavy spun brass. Within the oil jacket is immersed an electric heating coil. This coil draws current from the same line as the motor, only one connection being necessary. The fluid to be tested is heated in place. The operation is very rapid. Stirring is effected by a slight vertical movement of the plunger. For low temperature work the fluid and the adjacent parts are chilled in an ice bath or brine solution.

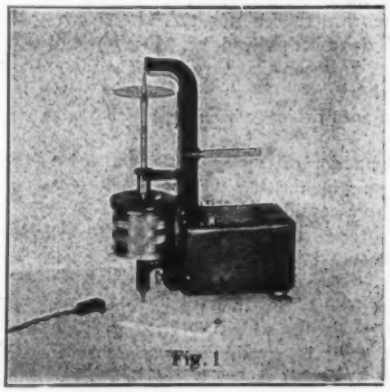


Fig. 1

In operating, the cup is filled to the mark on the side with the fluid to be tested (about 100 c.c.). The temperature is raised or lowered by means of the heating coils. The deflection noted on the dial is the viscosity of the fluid. Calibration of the instrument is effected by testing with a standard fluid of known viscosity. Sugar syrup is used for this purpose. The instrument with its thermometer and pipette is complete in itself. In its latest form it includes an indicator for showing speed of revolution of the cup. This indicator is not shown in the cut. No stop-watch or other accessories are required and any careful operator may learn to use it in a very short time. [Eimer and Amend, 211 Third avenue, New York City.]

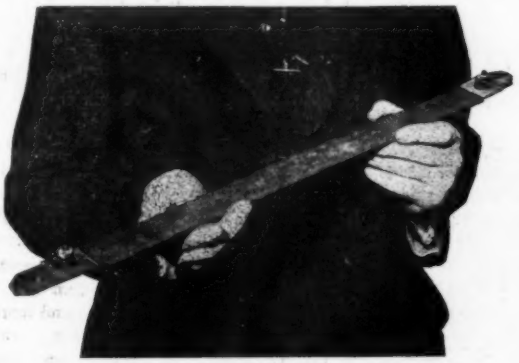
A DEVICE FOR SOUNDING AN ALARM. Anticipating overflow of a bottle receiving a liquid, consists of an electric contact closing by a float as the level of the liquid nears the top, and causing a bell to ring.

New Machines and Appliances.

STEEL-JACKETED ELECTRIC HEATER UNIT.

THE steel-jacketed electric heater unit shown in the accompanying illustration has been put to innumerable uses in all kinds of industrial plants for heating crane cabs, valve, pump and meter-houses, and various other applications. The ease of conducting electric current to remote corners makes the use of electric heat simpler than any other. The heater unit shown is of 500 watts capacity and may be connected up in multiple to any alternating or direct current circuit where the voltage is not in excess of 250 volts. Only as many as are actually required need be installed, yet additions can be made as easily as adding electric lamps. Just as lamps are placed singly or in groups in locations where light is required, so also are these units mounted singly or in groups in locations where heat is required.

The units are flat like an ordinary meter, the dimensions being 3/18 by 1½ by 23¾ inches. All parts are enclosed and no



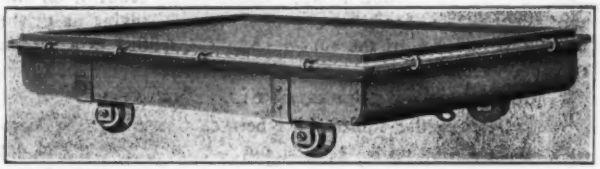
porcelain, cement, asbestos or molded insulation material is used. Insulated eyelet holes permit the use of ordinary screws for mounting—terminal connectors are placed at each end. In mounting, space is provided between units and between unit and surface on which it is mounted to allow for a good circulation of air. [Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin.]

SHERARDIZING INNER TUBE POLES.

Sherardizing is not incorrectly called a form of dry galvanizing and consists of placing the articles to be treated in a container, surrounding them with zinc dust and then placing the loaded container in a furnace where the articles are baked. When thus processed the articles have a grayish-white or silvery finish that penetrates the metal. Therein lies the particular value of sherardizing, for it will not peel off and if rust should form it cannot work under the coating and destructively spread.

Inner tube mandrels are sherardized by placing them in a car similar to that shown in the illustration. As nearly all tubes are 10 feet 6 inches long, the 13-foot cars are used more frequently, but tubes 17 feet long can be treated in the longest car. The mandrels are first polished and then arranged in rows of uniform width, particular care being taken that the tubes do not touch, as sherardizing is imperfect when metal surfaces are in contact. Zinc dust is then carefully packed about each mandrel so that pockets will not form when the dust settles.

After the tubes are packed, the car is sealed and run into the oven where it is heated for nine hours. As the pores of the mandrels expand the dust penetrates into them, forming an alloy with the metal, thus causing another factor of resistance in addition to the surface coating. When the mandrels are removed from the car, they present a silver-white appearance, and are ready for use in making inner tubes. Some manufacturers have all mandrels buffed after sherardizing, although



there seems to be a difference of opinion concerning the necessity or efficacy of that operation. [The Globe Machine & Stamping Co., Cleveland, Ohio.]

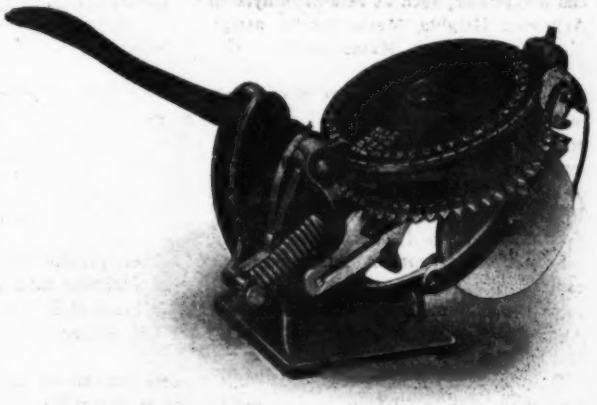
ROOVERS EMBOSSING PRESS.

Type embossing presses are of use in rubber mills for making pattern letter plates, tags and brands, the latter in particular being largely used for branding tires, hose and other molded goods. This machine, moreover, should be of interest to rubber planters in producing tree-tags for recording purposes.

The metal tape from which the plates are made is furnished in rolls and may be of zinc, brass, frosted aluminum or colored aluminum. The plates may be made with one letter or figure adjoining as large a number of letters or figures as may be desired.

The metal strip is fed automatically between circular die plates on which are the alphabet, figures, period, apostrophe, dash and slanting line for fractions. The dial is in plain view, showing all the characters corresponding with the die plates, also the words, "start," "finish," and "space."

To make a plate the dial is turned so that the word "start" is under the index; the handle is then pressed down, thus feeding the strip, so that the beginning of the plate has the right length. The dial is then turned so that the first letter or figure desired comes under the index, when the handle is pressed down again, feeds the strip the proper distance to receive the character and embosses it on the strip. The dial is then turned and the handle pressed down on whatever other characters are desired. The plate is completed by pressing down the handle on the word

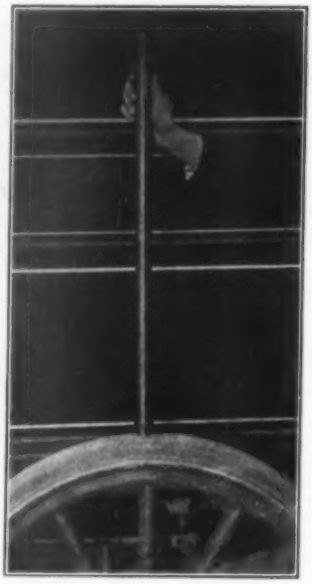


"finish," which cuts off the plate, rounding and perforating its end and rounding and perforating the beginning of the next plate.

By this system plates may be embossed with high or low figures or letters in the following sizes: 1/8, 3/16, 1/4, 9/32, 5/16, 3/8, 1/2, 5/8 and 3/4-inch type or letters. [Roovers Brothers, 100 Schermerhorn street, Brooklyn, New York.]

THE WHITNEY SOLID TIRE TESTER.

In order to overcome the unsatisfactory results, the inconvenience and expense of testing tires for efficiency on the road, an instrument for testing solid tires by the drop method has been recently perfected. After several years' experience it is found that the results obtained by this method check up very closely with the road tests and give a fairly accurate indication of the effect of the quality of the rubber compound on the mileage on one charge of the battery.



The tire tester consists of a metal tube 32 inches long and 1¼ inches in diameter, slotted part way on one side. A plunger is contained in the tube and is free to move in it. A pin in the plunger projects through the slot and a pointer on the pin moves over a scale along the slot. The graduations on the scale are ¼-inch apart and range from 0 to 100. When the plunger is at the bottom of the tube and is resting on the tire the pointer is at 0. When the plunger is at the top of the tube and is in position to be dropped the pointer is at 100. A latch is arranged to support the plunger at the top and by pushing it to one side the plunger is uniformly released. The reading of a tire's efficiency is obtained by observing the highest points reached by the pointer on the rebound of the plunger when dropped from 100.

The tester is placed on the highest part of the tire and is held vertically. It should not be pressed down on the tire but should rest lightly on it. The tire itself should be held in a vertical plane and not inclined at an angle. The tire must be supported by something solid. When it is tested before it is mounted on the wheel it should be supported directly underneath the tester. When the tire is not of the solid base type or or has no stiffening metal band to which it can be mounted it should be braced so that it will rigidly maintain its shape. When the tire is tested on the wheel the latter should stand on a solid floor and the tester he held straight above a spoke.

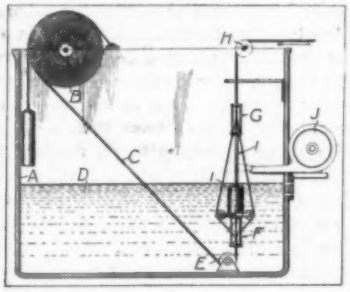
The efficiency of a tire varies considerably with its temperature. It is therefore necessary to test all tires at the same temperature to get a correct comparison. By making a series of tests on different tires at various temperatures, curves may be plotted that will give in a general way the amount of variation of efficiency due to temperature. A tire may then be tested at any temperature and its temperature noted; its efficiency may then be found at some standard temperature. Care should be taken that the temperature of the tire is obtained and not that of the surrounding air, as there is apt to be considerable variation between them unless the tire has been standing for some time in a room at constant temperature. It also takes some time for the temperature of a tire to become uniform throughout and some allowance must be made for this.

When two or three readings are taken on the same spot of the tire, the last reading will be higher than the first, due to the tire having been softened slightly by the impact of the plunger, therefore to get a true reading at the observed temperature the first reading should be the one recorded. If another reading is desired as a check, the tire should be shifted so as to present a new surface. [Commercial Truck Co. of America, Philadelphia, Pennsylvania.]

MACHINERY PATENTS.

CORD IMPREGNATING APPARATUS.

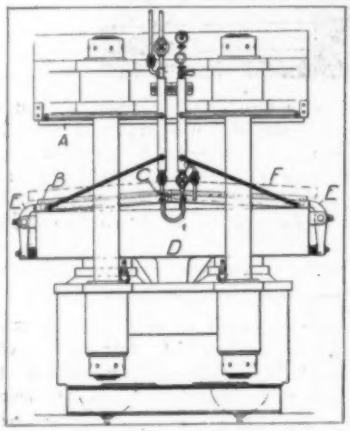
THE individual strands of a cord are momentarily untwisted, impregnated with rubber solution, and twisted again during the passage of the cord through this apparatus. The illustration is a vertical section of tank *A*, on which is mounted reel *B*, from which cord *C* passes through solution *D* around pulley *E* to the spreading device *F*, where the individual strands are separated and then passed through the retwisting device *G*, over pulley *H*, to the wind-up reel. A weight *I*, carried on a center rod, provides means for actuating the suspended spreading device by gravity.



When the cord is pulled in the direction of the arrow the spreading device is lifted and the action of the weight untwists the cord in cage *F* and retwists the cord in cage *G*, the individual strands being impregnated during their upward passage through the solution. The coated strands are dried in a current of warm air produced by a fan-blower before retwisting. [Clair G. Hoover, assignor to the Goodyear Tire & Rubber Co., both of Akron, Ohio. United States patent No. 1,251,032.]

PRESS FOR MAKING COMPOSITE INSULATING SHEETS.

This press is used in the manufacture of composite insulating sheets or plates and is designed to distribute uniform pressure over the entire sheet, thereby eliminating creases and blisters in the finished material.



In the front elevation of the press shown herewith, the upper plate *A* is stationary while the lower one, *B*, is operated vertically by two hydraulic rams, both plates being chambered for steam. The lower plate is divided transversely at *C* into two sections, the inner edges of which are supported by four spring-controlled pistons held in the head *D*, the sections of the plate forming a ridge in the middle and sloping toward both sides like a roof. The outside edges of the divided plate are supported by spring buffer levers *E*, that resist lateral movement of the sections.

When the superposed sheets of insulating material *F* are placed on the lower press plate and the vertical rams operated, pressure is first applied to the middle part of the material, due to the ridge, and as the spring pistons are forced downward the inclinations of the press plate gradually become less, resulting in a uniform, progressive pressure on all parts of the material. [Emil Kaefely, Basel, Switzerland. United States patent No. 1,246,740.]

OTHER MACHINERY PATENTS.

THE UNITED STATES.

1,248,645. Tire machine. W. O. Gottwals, Washington, D. C.

1,248,681. Separable core for making pneumatic tire casings. J. S. Lauritzen, Akron, Ohio.

1,248,962. Tubing apparatus. E. G. Webber, assignor to The Fisk Rubber Co.—both of Chicopee Falls, Mass.

1,248,963. Tubing die. E. G. Webber, assignor to The Fisk Rubber Co. —both of Chicopee Falls, Mass.

1,249,040. Tire building core. P. De Mattia and B. De Mattia—both of Clifton, N. J.

1,249,053. Wire assembling machine. C. R. Evans, Akron, Ohio, assignor to The B. F. Goodrich Co., New York City.

1,249,216. Separating device for rubber mills. J. J. Shea, assignor to The Hartford Rubber Works Co.—both of Hartford, Conn.

1,249,998. Vulcanizer. S. D. Orser, Russellville, Ala.

1,250,338. Machine for making flaps for pneumatic tires. E. Nall, assignor to The Goodyear Tire & Rubber Co.—both of Akron, Ohio.

1,250,504. Core or mandrel. W. F. Ray, Chicago, Ill.

1,250,771. Repair vulcanizing device. R. Bean, Berea, Ohio.

1,250,916. Apparatus for making cord tire skeletons. N. W. McLeod, St. Louis, Mo., assignor, by mesne assignments, to American Motor Car Co., Detroit, Mich.

1,251,009. Making packing. J. R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York City.

1,251,088. Core cooling apparatus. E. Nall, assignor to The Goodyear Tire & Rubber Co.—both of Akron, Ohio.

1,251,138. Tire mounting chuck. W. C. Tyler and G. B. Heffelfinger, assignors to The Goodyear Tire & Rubber Co.—all of Akron, Ohio.

REISSUES.

14,495. Repair device. H. T. Stephens, Carmathen, assignor to Mustikon, Limited, Cardiff—both in Wales.

THE DOMINION OF CANADA.

179,473. Machine for sheet rubber. The Canadian Consolidated Rubber Co., Limited, Montreal, Canada, assignee of M. H. Clark, Hastings-on-Hudson, N. Y., U. S. A.

179,474. Paper wrapping machine for tires. The Canadian Consolidated Rubber Co., Limited, Montreal, Canada, assignee of T. Midgley, Lancaster, Ohio, U. S. A.

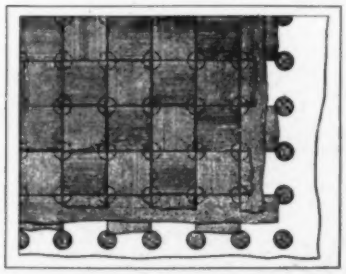
THE UNITED KINGDOM.

110,243. Tire making machine. F. H. Mercer, H. F. H. Blease, and Avon India Rubber Co.—all of Melksham, Wiltshire.

PROCESS PATENTS.

BALLOON FABRIC.

THIS is a composite fabric comprising rubberized, interwoven bands of parallel interwoven threads of cotton, linen or silk, the whole being attached to a thin sheet of pure gum. In order to keep the threads in the form of a band before and during the process of weaving the bands together they are passed through rubber cement. At the corners of the squares formed by the edges of the interwoven bands are located small discs of fabric that close up the small holes which would otherwise be left in the band layer, these discs being cemented both to the rubber and to the band layer.



The process of making this fabric is to lay on a suitable support a sheet of rubber, either partly or fully vulcanized, to form the impervious layer, cover its upper surface with rubber cement, and then stick the fabric closure discs in place at the proper points, after which the surface and discs are given another coating of cement, and the layer of thread bands applied. If the applied rubber sheet is only partly vulcanized, then the fabric, balloon bag or other structure is given a final heating in a suitable dry room. The preferred mode of applying the band layer, especially in the manufacture of a balloon where the fabric has to be shaped to a curved surface, is to weave the thread bands together as they are being laid upon the cement-covered surface of the rubber layer and the reinforcing discs, the desired shape being imparted by previously mounting the rubber layer upon a form having the shape of a section of the balloon. [John R. Gammeter, Akron, Ohio. United States patent No. 1,247,658.]

OTHER PROCESS PATENTS.

THE UNITED STATES

1,248,871. Method of producing tires. F. W. Kremer, Carlstadt, N. J.

1,248,888. Treating products resembling caoutchouc. E. Münch, assignor to Badische Anilin & Soda Fabrik—both of Ludwigshafen-on-the-Rhine, Germany.

1,249,030. Method of forming articles of sheet rubber. F. A. Cigol, Little Falls, N. J.

1,250,760. Process and apparatus for fractional distillation and condensation. J. W. Aylsworth, East Orange, assignor to Condensite Co. of America, Bloomfield—both in N. J.

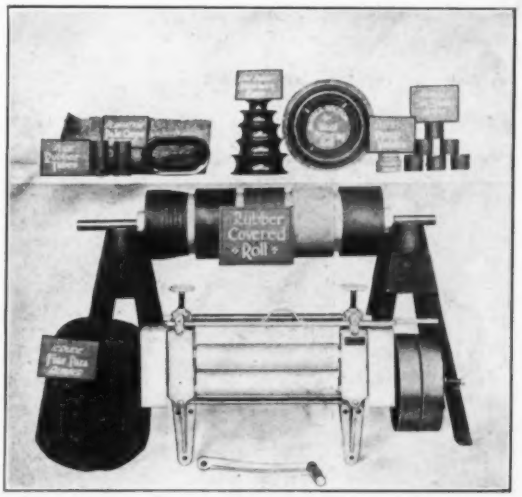
1,280,760. Process and apparatus for fractional distillation and condensation. J. W. Aylsworth, East Orange, assignor to Condensite Co. of America, Bloomfield—both in N. J.

THE UNITED KINGDOM.

110,178. India rubber articles. A. E. Alexander, 306 High Holborn, London.

RUBBER IN TEXTILE MANUFACTURING.

The already extensive employment of rubber in textile manufacturing is constantly growing as its unique qualities are adapted to the special requirements of the work. It has proved particularly effective as applied at the vital point of contact with the textile being processed. Doubtless another decade will bring forth many further developments, but the accompanying illustration of its products for textile uses, prepared by the



American Wringer Co., Woonsocket, Rhode Island, gives a good idea of the present uses of rubber products in the manufacture of textiles.

Hard rubber bleachery eyes, extra thick, are comparatively inexpensive and last longer than the ordinary type because they wear smoothly and are not likely to break. Round eyes are made in 1½, 3½, 4¼, 5 and 6-inch sizes, and there is an oval eye three by seven inches.

Interlocking sectional rubber rings for rolls find a constantly increasing use, especially for scouring wool and for wet finishing operations.

Rubber spinning rings are supplied to all the silk spinners of the country. They may be fastened to the iron centers by the purchaser, or will be vulcanized to the centers by the manufacturer if desired for any purpose. A roll covered with fine densities of rubber is shown by the illustration herewith. It also pictures a Universal wringer for laundry use or squeezing purposes, requiring rubber rolls, 12 to 48 inches in length and 3¼ to four inches in diameter. Power wringers of other styles are also manufactured with rolls of any size.

Rubber tubes are made in any size and stock desired, while rubber pump valves give good service in either hot or cold water

New Goods and Specialties.

WHEN A KNITTING BAG IS SOMETHING MORE.

THE necessity which mothers many inventions sometimes shows as much ingenuity in its adaptations as real mothers exhibit in their devices for remodeling garments and making them serve for several purposes. This time it is the apron-work-bag which has undergone a metamorphosis. The exigencies of wartime are responsible for what, in the first instance, is a sensible, useful knitting bag, especially planned for the Red Cross worker. Designed also to meet the demand of women of good taste who have tired of the knitting bag of the "flowery"

type, the one shown is made of plain army-blue, rubberized taffeta, and all the flaps and pockets are closed with snap fasteners. The clever features are that there are pockets for toilet accessories, knitting needles, etc., and a folded-in top with ribbon strings which converts the bag into an apron upon occasion. Being of rubberized material, this bag is also suitable for use as a bathing-suit bag and the extra pockets are then no less useful. (The N. W. B. Co., New York City.)

RIE NIE AUTO PATCH.

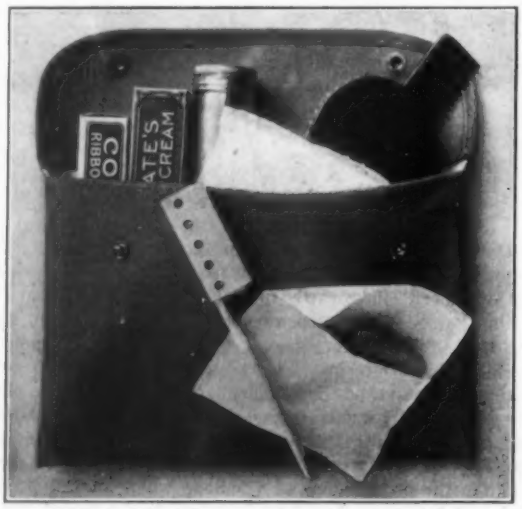
This is a novel and effective patching material for repairing casings, inner tubes, hose, rubber footwear, clothing, water bottles, auto tops, etc. The patch is formed of three plies, consisting of a thin layer of pure rubber vulcanized to a heavy twilled cotton backing. This cured rubber ply is surfaced on the other side with a coating of about the same thickness of unvulcanized red rubber which is protected with a covering of glazed cloth. In making a repair the surfaee to be patched is cleaned with gasoline, roughed with emery cloth, and coated with rubber cement. When the latter is dry, the raw surface of a piece of patching of suitable size is firmly pressed in contact with the cement. The inherent tackiness of the freshly exposed unvulcanized surface makes a secure bond with the cement and thus effects a permanent repair. [Durkee-Atwood Co., Minneapolis, Minnesota.]

"MISS LIBERTY," A RUBBER KNITTING NEEDLE.

A knitting needle which does not interfere with a woman's neighbors when she knits in street cars and which cannot be lost is the latest invention for the patriotic worker for our soldiers and sailors. This needle is curved, with a point at each end, the ends crossing each other slightly when at rest. The work is knit around the needle, off one end on to the other, and it is almost impossible to drop stitches. Besides, the weight of the work is evenly distributed on the needle and the space occupied is considerably less than with ordinary knitting needles. Two sizes are made for different kinds of work. The illustration shows a narrow strip of knitting in position for working, but the needle may also be used for knitting socks or other round articles. (Greenhut Co., Sixth avenue at 18th and 19th streets, New York City.)

A WATERPROOF TOILET CASE.

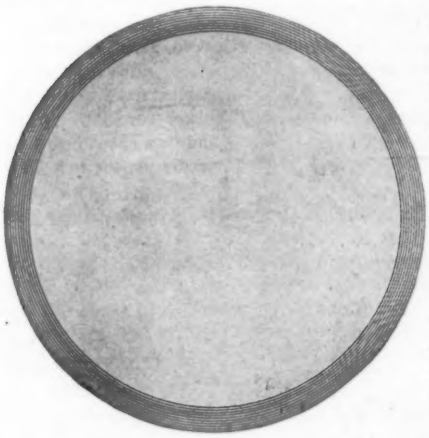
A completely equipped toilet case has been devised for the use of the soldier which not only is waterproof outside but has a white rubber lining. It is made of tan waterproof army cloth,



with a flap held closed by snap fasteners. A celluloid shield is provided for the tooth brush and a small separate case for the soap. There are also included military and shaving brushes, comb, shaving cream, and wash cloth. (Mark Cross Co., 404 Fifth avenue, New York City.

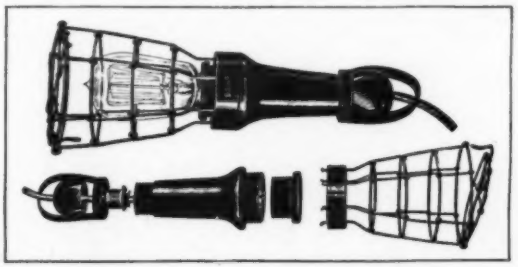
A RUBBER CHAIR MAT.

A mat which will save wear on rugs, carpets and floors is made of light-gray rubber with a beveled edge which permits the castors of chairs to roll over it easily. The mat is of high-grade stock with smooth, hard-finish, flexible upper surface and a rough-finished under surface which grips the rug or floor on which it rests and prevents slipping. Its use is especially desirable on hardwood floors to protect the finish. It comes in four sizes, from 36 to 42 inches in diameter, ⅛ inch thick. [The Federal Rubber Co., Cudahy, Wisconsin.]



AN EBONITE GARAGE HAND-LAMP.

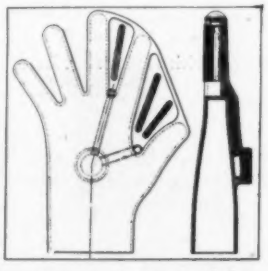
A new garage hand-lamp which has been patented is composed throughout of ebonite, with metal parts, plungers and terminals protected from contact with moisture and acid fumes. The lamp can be locked and sealed, and no screws are required to fasten



the lamp guard or leather hanger, thereby avoiding shocks and short circuits. There is a special arrangement of the grip in the handle which prevents any strain on the wires. [S. Smith & Sons (M. A.), Limited, 179-185 Great Portland street, London, W. 1, England.]

A VACUUM-CLEANER GLOVE FOR GROOMING HORSES.

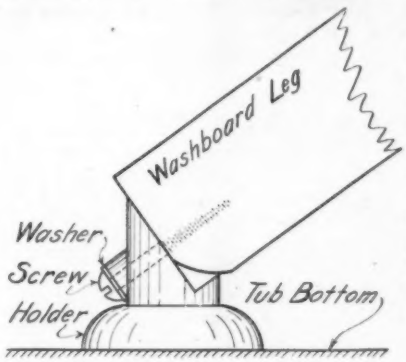
This recent invention is an ingenious substitute for the familiar curry-comb and brush, and comprises a vacuum glove of soft rubber that is connected by a rubber hose to a suction pump. Leading to this main duct are two channels, one starting between the thumb and first finger, the other between the first and second fingers. At both these junctures, stiff cleaning brushes are inserted, being situated in channels in an elastic webbing which extends between the fingers and allows sufficient space around each brush to insure complete suction of the dust into the surrounding vacuum.



The bristles of the brushes are wrapped around a core of flexible rubber, in order to permit easy access to all irregularities in the surface operated upon. Two modifications of this cleaning glove may be used, if preferred. In one, the channels and brushes are located upon the fingers of the glove instead of between them—the webbing being, of course, unnecessary. In the other design, a mitten serves the required purpose, and a large recess in the palm contains the brushes and air ducts. The brushes in all three forms project a slight distance beyond the open channels. [Walter B. Guild, Roxbury, Massachusetts.]

RUBBER FEET FOR THE WASHBOARD.

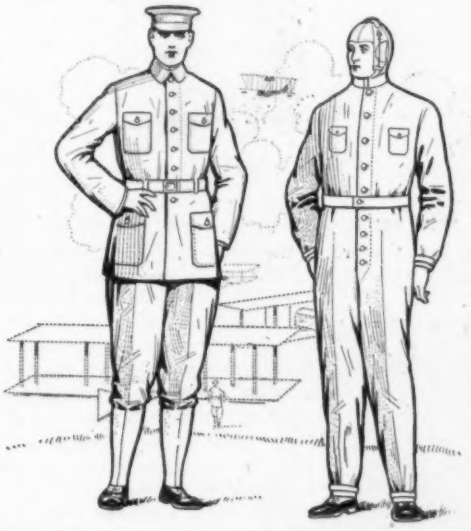
One of the rubber washboard holders or feet shown in the accompanying cut is attached to each leg of the washboard with brass screws and washers. When the washboard is put into the tub, at any desired angle, the bottom surface of each rubber holder rests on the bottom of the tub, forming a suction cup which holds the board firmly in position. It remains until air is let under the lip by raising it a trifle with the finger.



This device prevents the washboard from slipping, eliminates wear on the tub, and allows the washer to rub as vigorously on the up-stroke as on the down-stroke. It also prevents backache because it makes the board adjustable, and it lightens the actual labor of washing by providing a shock-absorber to take up the jar usually experienced by the shoulders and back when use is made of the ordinary washboard without these rubber holders. (M. C. Frank, 52 Nace street, Oakland, California.)

KHAKI-BACKED RUBBER AVIATORS' SUITS.

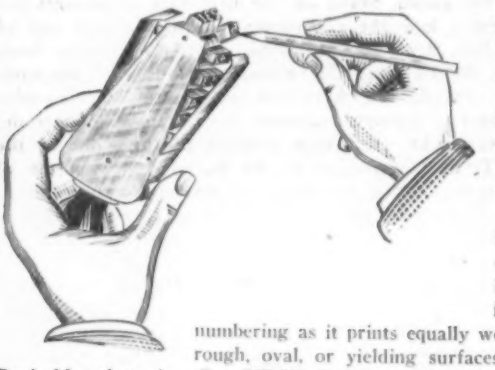
The needs of the aviator have spurred manufacturers to provide clothing affording protection from storms, wind and cold. The accompanying illustration shows two developments of the



aviator's suit in rubber material with khaki backing. The company which makes these specializes in extra sizes for tall men and particularly solicits made-to-measure orders, although it carries ready-to-wear goods in stock. It advertises the materials used to be wind, rain and weather proof. (Sanders Co., 218 Indiana avenue, Indianapolis, Indiana.)

A NEW PATENTED DATING STAMP.

Most dating stamps look alike but this one, called the wing numbering and dating stamp, is different. The bands on which the numbers and dates are carried are tensionless, the type projecting from the bands and giving the device its name. The stamp is self-alining and is unequaled, it is claimed, for hand dating and numbering as it prints equally well on flat, rough, oval, or yielding surfaces. (T. S. Buck Manufacturing Co., 537-539 Broadway, New York City.)



A RUBBER-PROTECTED HYDROMETER.

A new hydrometer called the "Workrite," it is claimed, may be dropped without breaking and will not roll away when laid on an uneven surface. Rubber collars are placed at the top and bottom of the glass. The one at the top prevents the glass from striking any object if the hydrometer is dropped, while the one at the bottom is square and minimizes the tendency to roll. As the tube at the bottom is of flexible rubber, bumping it accidentally against a battery jar will not knock out the connection and thereby spill the acid and break the float. Inside the tube there is a small rubber cube which acts as a cushion for the float to strike against when the hydrometer is in use, and which keeps the float from closing the passage for the liquid.

This hydrometer may be obtained alone or in conjunction with a glass jar of one quart capacity which serves as a container for distilled water to be used in refilling batteries. The rubber collar at the top of the hydrometer then becomes a stopper for the top of the jar, making it dust and air tight. (The Automobile Necessities Co., 5716 Euclid avenue, Cleveland, Ohio.)

THE "ADJUST-O-SHIELD" FOR SUN AND STORM.

An attachment to protect the automobile driver from the glare of the sun on the windshield and from rain when driving with the upper part of the windshield open, has been patented in the form of a curtain on a roller, which can be adjusted at will in any desired position or rolled up out of sight when not in use. The curtain is made of rubberized top material and is provided with top straps and cantilever side arms which keep it in position and prevent it from slipping out of place. (Michigan Tire & Accessories Co., Grand Rapids, Michigan.)

A PRACTICAL ELASTIC PUTTEE.

The need of the soldier for practical, comfortable and waterproof puttees has resulted in the style shown in the accompanying illustrations. It is made of khaki and elastic in the same manner as elastic webbing, with the exception that the threads of the warp on the inner side are finer, thereby giving the puttee a curved shape which adapts itself to the contour of the leg. At the bottom of the puttee a straight piece of khaki webbing, without elastic, goes once around the ankle after fastening the hook which attaches it to the second eyelet of the shoe. The elastic part of the puttee joins the webbing at this point and, in turn, is put once around the ankle, over the webbing, to preserve a uniform appearance. The rest of the puttee is then wound in the usual manner. At the top there are eyelets at intervals, into one of which is fastened the hook which keeps the whole in place. For equestrian purposes the winding is reversed. The slipping of the ordinary puttee is eliminated in this one.

This puttee offers a strong support to the muscles of the leg, preventing swollen feet and varicose veins, and increasing the marching power of the wearer. It is waterproof and is easily kept clean. In addition, the elastic in its makeup does not deteriorate in tropical climates, one pair of these puttees having been worn a year during a trip to Africa. (The Savage Supply Co., Inc., 45-47 East 20th street, New York City.)

RUBBER MALLETS.

These are for use in connection with automobiles or other articles with smooth surfaces, and prevent injury to paint, woodwork, brass, or other soft metal. They are also useful in changing tires. They are made of an especially tough compound which will stand very rough usage. The handles are of hickory. (Thermoid Rubber Co., Trenton, New Jersey.)

The Editor's Book Table.

MATERIALS FOR THE HOUSEHOLD, CIRCULAR NO. 70 OF THE Bureau of Standards. Government Printing Office, Washington, District of Columbia. [260 pages large octavo, paper covers, 25 cents.]

THIS comprehensive document describes materials other than food and drugs used in the home. The purpose is to stimulate interest in these materials, to explain their properties, and help in their intelligent selection and use. Rubber is described briefly, followed by mention of articles of rubber, and directions for their care. Little or nothing in this chapter or section is unknown to rubber manufacturers and dealers, but there are some useful hints for family consumers. One point made is that the retail customer cannot test articles, as is done by the wholesale purchaser, but must rely on (1) the reliability of the seller; (2) the guaranty of the maker, and (3) experience with articles of a definite brand. Among the authorities given credit is one of the books published by THE INDIA RUBBER WORLD.

RULES AND REGULATIONS OF THE WAR TRADE BOARD, Number 1. November, 1917. Washington, District of Columbia. [69 pages, paper.]

This book which gives in full the rules and regulations made by the War Trade Board to carry into effect the provisions of the Espionage act and Trading With the Enemy act, is needed by every exporter and most importers. It contains a history of the control of exports up to and including the formation of the War Trade Board. It gives a form for application for license to export, conditions under which commodities can be exported, the various lines of goods included in the conservation lists and similar important matter. The Board will publish revisions from time to time as new rulings become operative, together with other pertinent information.

THE INDIA RUBBER JOURNAL DIARY AND YEAR BOOK FOR 1918. Maclaren & Sons, Limited, London, England. [Large quarto, 200 pages. cloth. 3s. 6d.]

This convenient desk companion, published mainly for the British rubber trade, comes in its usual form, except that, as was the case last year, the interleaves of blotting paper are omitted. Besides the large spaces for daily memoranda, there are about 80 pages devoted to a full directory of the trade, with telephone numbers and street addresses in England, Scotland and Wales. There is also a list of the war trade ministries departments, committees and commissions, and, in addition, a large amount of statistical information carried up to the end of 1916. A number of advertisements of British manufacturers are included.

ONZE WEST IN BEELD EN WOORD. FRED. OUDSCHANS DENTZ and Herm. J. Jacobs. J. H. de Bussy, Amsterdam, Holland. [Art paper cover, 150 illustrations, index, tables, 123 pages; price. fl. 2.50.]

This work is primarily an album intended for use in high schools and similar institutions, and aims to familiarize the Dutch with their colonies in America, but will be found useful for reference by American firms engaged in foreign business. The numerous illustrations, taken from actual photographs, are exceedingly well chosen and accompanied by just enough descriptive matter to enhance their interest to the reader.

Considerable space is devoted to the various industries in these islands, and rubber, cocoa and sisal plantations, balata forests and gold mines are all represented. These illustrations are rendered more valuable by data at the end of the book covering climate, situation, population, shipping, imports and exports.

AN EXPORT ORDER, AND ALLIED TOPICS. FOREIGN TRADE Department, National Association of Manufacturers, New York City. [Quarto, 48 pages, with maps and illustrations.]

The National Association of Manufacturers in issuing this pamphlet has performed a real practical service for makers of goods who have or wish to secure foreign trade. It describes in detail the successive steps in securing the order, shipping the goods, filling all the necessary documents for the steamship line, the government of this country and of that to which the goods are going; shows the invoice form, insurance, the draft and the necessary details of correspondence, etc. In addition, there is a table stating the consular requirements of foreign countries, information about trademarks, drawbacks, etc., some account of the work of the Foreign Trade Department of the National Association of Manufacturers, and a world-map, showing the location of 2,400 correspondents in foreign countries at the service of the association.

NEW TRADE PUBLICATIONS

"THE Link-Belt Silent Chain" is a new pamphlet sent out by the Link-Belt Co., Chicago, Illinois. It contains about eight pages of illustrated description, while twice as many pages are entirely devoted to graphic half-tone pictures of the belts *in situ* and in operation. The cover is heavily embossed, and each page has running its full width the link-belt on a background border of red.

* * *

The Faultless Rubber Co., Ashland, Ohio, sends out a Sales Service Bulletin to foster the sales of its lines at retail stores. Advertising "copy" and cuts are furnished, business hints are given, profit-making stories told, while half-tone cuts of window and counter displays assist the retailer in pushing sales of hot-water bottles and other rubber sundries of its manufacture. There is a special page for clerks, which contains some points worth consideration by those employed in drug stores.

* * *

The General Tire & Rubber Co., Akron, Ohio, is sending out a Tire Accessory Catalog, giving descriptions and prices of its large variety of patches, boots, tire plasters, reliners, vulcanizing rubber, cements, fan belts, and also the "General" tires and inner tubes. In these days of many catalogs this one stands out prominently, the covers and pages being gray and the title and trade-mark printed in black and red, the same colors being used in the text and illustrations also.

* * *

The Apsley Rubber Co., Hudson, Massachusetts, has sent out its Catalog of Rubber Footwear, and with it a Supplementary Catalog of its new styles for the season of 1918. Both books are handsome, well printed and finely illustrated.

* * *

The Voorhees Rubber Manufacturing Co., Jersey City, New Jersey, has issued a neat little booklet picturing, describing and priceing its line of inner tubes, refiners, inner sleeves, boots, patches, cements and other automobile accessories. This "Catalog No. 10" is a handy book for the tire station and automobile repair shop, containing a code for telegraphic orders, etc.

* * *

The United States Rubber Co., New York City, has sent out the usual handsome and comprehensive catalogs of the various lines of footwear made by its subsidiary companies. They are in pocket form, long and narrow, about 8½ by 4¼ inches, and contain about 50 pages. Each one shows the entire line manufactured in the brand it represents, a full description being given of the various shapes and styles accompanied by a first-class half-tone picture of the goods. The catalogs have handsomely engraved colored covers, and all are fine specimens of the printer's art. Most of them illustrate new specialties besides the regular goods with which the trade is already familiar.

HOLIDAY GREETINGS.

AS in the past, THE INDIA RUBBER WORLD during the recent holiday season was the recipient of numerous New Year greetings from rubber and allied trade firms in the form of calendars and various useful souvenirs, which it takes this opportunity to acknowledge, at the same time reciprocating the good wishes expressed.

CALENDARS.

Adamson Machine Co., rubber-working machinery, Akron, Ohio. This displays a large and realistic reproduction of a hand-painted water color, by Edwin Lamasure, the subject being a pastoral river scene of great beauty.

From Elmer E. Bast, manager of Hamilton Rubber Manufacturing Co. and Acme Belting Co., belting, packing, tires and tubes, mechanicals and carriage cloth, Chicago, Illinois, a large and handsome art calendar, consisting of a full color reproduction of the painting "The Girl I Left Behind Me," by Hortense Bucher.

Dinsmore Manufacturing Co., mill sewing machines and supplies, Salem, Massachusetts. Six sheets, each bearing the calendar for two months, are embellished with large halftones printed in brown and showing old Salem doorways, which have been the admiration of students of architecture throughout the country.

General Electric Co., electric motors, control and many other devices, Schenectady, New York. A large and practical 12-sheet calendar for office use, each sheet bearing the preceding and following as well as the current month's calendar and showing some important electric installation made by the company.

Lavelle Rubber Co., mechanicals, 181 Lake street, Chicago, Illinois. A long, sensible calendar for business use, showing the present, past and coming months on each page in large type.

The Link Belt Co., Chicago, Illinois, has issued a large 12-sheet office calendar, 16 by 25 inches, printed in three colors. Each sheet bears the calendar for the previous and following as well as the current month. The calendar will be sent to responsible concerns on request.

George F. Lufbery, Jr., manufacturer of chemicals, Elizabeth, New Jersey. Another of his large ready-reference calendars for office use. Each sheet carries a calendar for the current month, centrally located, in bold-face type, and above and below, respectively, the calendar for the previous and coming month in outline type.

Monatiquot Rubber Works Co., manufacturer of "naturized" rubber, South Braintree, Massachusetts. A large art calendar featuring the head of Squantum, chief of the Monatiquot Indians, in color.

John Royle & Sons, tubing, insulating and straining machines and circular looms, Paterson, New Jersey. A practical calendar of medium size for office use.

J. H. Stedman Co., scrap rubber merchants, South Braintree, Massachusetts. The twelfth of a series of picturesque old New England scenes.

SOUVENIRS.

J. W. Coulston & Co., dry paints and colors, New York City. A desk-pad diary and calendar for daily memoranda. Interleaved announcements regarding the firm's products act as blotters.

H. Muehlstein & Co., scrap rubber, New York City. A handsome leather wallet and card case bearing the name of the recipient in gold letters.

New Jersey Rubber Co., reclaimed rubber, Lambertville, New Jersey. A handy memorandum desk calendar.

Somerset Rubber Reclaiming Works, reclaimed rubber, Somerset, New Jersey. A cowhide card case and perforated "live" reminder book for brief memoranda, inscribed with the name of the recipient in gold letters. Fillers are to be furnished monthly.

CHRISTMAS AND NEW YEAR CARDS.

J. H. Day Co., machinery for rubber manufacturers, Cincinnati, Ohio.

Essex Rubber Co., miscellaneous rubber goods, Trenton, New Jersey.

Fabric Fire Hose Co., fire hose, New York City.

Hawkeye Tire & Rubber Co., tires and tubes, Des Moines, Iowa.

F. R. Henderson & Co., crude rubber, New York City and Akron, Ohio.

Mansfield Tire & Rubber Co., tires and tubes, Mansfield, Ohio.

Frederick J. Maywald, consulting chemist, New York City.

L. J. Mutty Co., rubber cloths and tubing, Boston, Massachusetts.

Racine Auto Tire Co., tires and tubes, Racine, Wisconsin.

Sterling Tire Corp., tires and tubes, Rutherford, New Jersey.

ARMY AND NAVY AWARDS.

NAVY SUPPLY AWARDS.

THE following awards have been made during the past month for furnishing navy supplies:

ASBESTOS PACKING.—22,000 pounds for valve stems, $2,240; 4,000 pounds for valve stems, $3,760. United States Rubber Co.

CABLE.—1,500 feet rubber insulated, $208.66. Beldon Manufacturing Co.

DIAPHRAGMS.—100,000 red rubber. $10,125, The B. F. Goodrich Co., and $10,500, Pennsylvania Rubber Co.

GASKETS.—10,000 pounds molded rubber, $7,700. The United States Rubber Co. (300 pounds molded rubber, $252. Empire Tire & Rubber Co.)

GASKETS.—100,000 red or gray rubber. $5,000, Lee Tire & Rubber Co., and $5,400, Voorhees Rubber Manufacturing Co.

GASKET GUM.—$88,759.20; $3,135.80. The United States Rubber Co.

PACKING.—22,000 pounds spiral gland, $11,880; 1,500 pounds spiral gland, $853. Crandall Packing Co.

PACKING.—75,000 pounds sheet rubber with brass wire insertion, 38 cents; 5,500 pounds sheet rubber, 38 cents. The B. F. Goodrich Co.

PACKING.—225,000 pounds compressed fiber sheet asbestos, $84,937.50; 30,000 pounds compressed fiber sheet asbestos, $11,325. The B. F. Goodrich Co.

PACKING.—23,000 pounds sheet for high-pressure joints, 39.5 cents; 1,000 pounds sheet for high-pressure joints, 44.5 cents. Crandall Packing Co.

PACKING.—125,000 pounds rubber sheet, grade No. 1. $34,312.50, Gutta Percha & Rubber Manufacturing Co., part, and $34,312.50, United States Rubber Co.

PACKING.—25,000 pounds sheet rubber, grade No. 1. $13,975. Gutta Percha and Rubber Manufacturing Co.

PACKING.—25,000 pounds sheet rubber, grade No. 2. $2,312.50, Gutta Percha & Rubber Manufacturing Co., and $2,312.50, Manhattan Rubber Manufacturing Co.

PACKING.—1,000 pounds sheet rubber, grade No. 2. $195. Gutta Percha and Rubber Manufacturing Co.

PACKING.—6,000 square yards fiber sheet, 38 cents; 6,000 square yards fiber sheet, 41 cents. Endura Manufacturing Co.

PACKING.—6,000 square yards asbestos metallic cloth sheet, 2,500 square yards asbestos metallic cloth sheet, 135,000 pounds flax. $83,200, The Danubil Co., and $5,500, Montgomery Bros.

PACKING.—12,000 pounds flax, $7,800. Montgomery Bros.

PACKING.—4,000 pounds asbestos metallic cloth tape, $3,400; 1,000 pounds asbestos metallic cloth tape, $890. The Danubil Co.

RUBBER-COVERED WIRE. 400 feet, $88.76. Bishop Gutta Percha Co.

RUBBER-COVERED WIRE. 350,000 feet duplex, $10,661. A A. Wire Co.

TUCK'S PACKING. 35,000 pounds, square, without rubber core; 2,000 pounds, square, without rubber core. Goodyear Tire & Rubber Co.

WIRE.—12,000 feet rubber-covered, high-tension, $900. General Electric Co.

WIRE.—4,800 feet rubber insulated, $603.84. The Okonite Co.

PANAMA CANAL AWARDS.

The following awards have been made during the past month by the general purchasing officer of the Panama Canal:

FRONT TIRES. 4, $173. The B. F. Goodrich Co.

FRONT TIRES. 6, $194.10. Goodyear Tire & Rubber Co.

INNER TUBES. 24, $18.24. The B. F. Goodrich Co.

RUBBER VALVES. 56, $38.96. Empire Rubber & Tire Co.

SHEET RUBBER.—100 pounds, $84. The B. F. Goodrich Co.

TENDER HOSE.—30 pieces, $166.80. Republic Rubber Co.

TIRES. 4, with inner tubes, $108.60. Howe Rubber Co.

TIRES. 20 solid rubber, $1,126.40; 36 solid rubber, $1,044.72; total, $2,171.12. Goodyear Tire & Rubber Co.

ARMY MEDICAL SUPPLIES.

The following awards have been made by the surgeon general of the army:

BLOOD PIPETTES.—2,350 for white corpuscles dilution, 1-10, with rubber tubing and mouthpiece, $1.05 each; 2,350 for red corpuscles dilution, 1-100, with rubber tubing and mouthpiece, $1.05 each. E. Machett & Son, Inc., New York City.

CATHETERS. 1,500 flexible, $442.71; 1,500 flexible, $270.83; total, $713.54. United States Rubber Co., New York City.

ELASTIC BANDS.—17,000 boxes (1 gross in each box), $2,482. Hodgman Rubber Co., New York City.

FLUTTER VALVES. 45,000, $5,445. United States Rubber Co., New York City.

GAS MASK PARTS. 50,000 mouthpieces, 8.36 cents each; 50,000 flexible hose, 55.55 cents each; 100,000 rubber nose pads, 2.398 cents each; 50,000 check valves, 1.43 cents each; 50,000 flutter valves, 12.1 cents each; 100,000 die casting washers, 5.115-10 cents each; total contract, $41,629.50. United States Rubber Co., New York City.

GAS MASK PARTS. 50,000 mouthpieces, 8 cents each; 50,000 flexible tubes, 59.8 cents each; 100,000 nose pads, 2½ cents each; 50,000 exhaust valves, 7 cents each; 50,000 check valves, 1.05 cents each; 100,000 mouthpiece washers, 4/10 cent each; total contract, $40,825. The B. F. Goodrich Co., Akron, Ohio.

RUBBER BANDAGES.—1,500, $742.50. Parker, Stearns & Co., New York City.

RUBBER BANDS.—1,000 pounds assorted, $1,250. Hodgman Rubber Co., New York City.

RUBBER GLOVES. 5,000 pairs, light weight, $1,316.67. Miller Rubber Co., New York City.

RUBBER GLOVES. 5,000 pairs, $1,701.39. Canfield Rubber Co., New York City.

RUBBER GLOVES. 5,000 pairs, surgeons', $1,866.67; 5,000 pairs, medium rough, $1,666.67; total, $3,533.34. United States Rubber Co., New York City.

RUBBER HOSE. 1,000 lengths, ¾ inch, $4,000; 300 lengths, ¾ inch, $1,200; total, $5,200. Rolle Rubber Co., Inc., New York City.

RUBBER ICE BAGS FOR HEAD.—2,500, 13 inches diameter, $1,750. Hodgman Rubber Co., New York City.

RUBBER SHEETING. 2,000 yards, 54 inch, $1,900. Archer Rubber Co., New York City.

RUBBER TOURNIQUETS AND BANDAGES.—$2,000, $1,550. Parker, Stearns & Co., New York City.

RUBBER TUBING.—16,620 lengths, $581.70. Cincinnati Rubber Manufacturing Co., Cincinnati, Ohio.

RUBBER TUBING. 10,000 yards, $1,500. Julius Schmidt, Inc., New York City.

SHAVING BRUSHES.—225 dozen, $5.78 per dozen. The Rubberset Co., New York City.

SHAVING BRUSHES. 2,000, $958.33. Rubberset Co., Inc., New York City.

SMALL RUBBER CUSHIONS. 1,000, $1,500. Parker, Stearns & Co., New York City.

STOMACH TUBES WITH FUNNEL. 2,000, $1,150 Davol Rubber Co., New York City.

SYRINGES. 3,000 rubber bulbs, $2,250. Parker, Stearns & Co., New York City.

JUDICIAL DECISIONS.

METALLIC RUBBER TIRE CO. v. HARTFORD RUBBER WORKS CO., District Court, D. Connecticut. February 19, 1917. Memordandum in modification of opinion, June 29, 1917.

The Metallic Rubber Tire Co., sued the Hartford Rubber Works Co. and it was decided by the Circuit Court of Appeals that the patent held by the former for a non-slipping tire which had wire embedded in the outer surface had been infringed. The Hartford people had formerly operated under a license granted by the Metallic tire people and when it expired continued to manufacture a tire which closely simulated the patented product. The case was referred to a master for an accounting and the following exceptions were taken from his report:

The master had no right to discuss the question of infringement since this had already been decided by the court.

If there is no other way open to the public of supplying the demand for the use of a patented article the patentee is entitled to the entire profits.

The following items were questioned:

Taxes and insurance were improperly allowed, since they were on the entire plant and that was used for the manufacture of other products than the patent in suit.

The same was true of the item of repairs and depreciation. The ruling by the master allowing a lump sum for sales and replacement of defective tires made at a loss, was also rejected.

The item of royalties paid to others in manufacturing the tires was also disallowed.

There was no allowance made because of the depreciation in the rubber market.

A small amount should be allowed by the master for advertising, but the sum allowed by the master should be apportioned to take in only that part that was used to advertise the patented tire.

Nothing should be allowed for the items patent and legal expenses, general travel and bad debts.

The item set down as the Philadelphia fire loss was merely a book entry and needed more explaining.

A more serious question arose as to whether the master erred in deducting the profits on tires similar to the patented article, but which did not have the interwoven wire in the tread. The court sustained this ruling.

Although no sum was allowed for damages and loss of license fees, one might be allowed if the patentee can prove that one is due him. [Federal Reporter, Volume 245.]

FIRESTONE TIRE & RUBBER CO. *v.* SIBERLING.—Circuit Court of Appeals, Sixth Circuit, November 6, 1917.

Before the final decision of the above named case, which was an appeal from the interlocutory decree, a Belgian patent, said to bear on the validity and scope of one of the patents in suit, was discovered and the Court was asked to admit it to the records and to reopen the case.

The Court decided that the delay in bringing out the patent was accounted for and the reopening of the case should not

be denied because of the lateness of the introduction of that evidence.

This was granted and it was also decided that owing to the appellate jurisdiction of the Court it would be best, unless all parties agree otherwise, to dismiss the appeal, without prejudice and without costs, and remand the case to the lower court. Fifteen days was allowed for the making of arrangements to prevent dismissal of the appeal. [Federal Reporter, Volume 245, page 937.]

CUSTOMS APPRAISER'S DECISION.

BOTTLE STOPPERS OF CHINA AND RUBBER.—Bottle stoppers composed of china and rubber classified under paragraph 80, tariff act of 1913, are claimed dutiable under paragraph 368, according to the protest of Max Frankel Co., New York City. The bottle stoppers in question were found to be composed in chief value of rubber and held dutiable under paragraph 368. [Treasury Decisions, Vol. 33, No. 26, December 27, 1917.]

The Obituary Record.

OF AN OLD-TIME RUBBER FAMILY.

ATHERTON ALLERTON, an employe of Goodyear's Glove Division of the United States Rubber Co., 505 Broadway, New York, died at his home at White Plains, New York, January 2, after a brief illness.

Mr. Allerton was born in New York city November 3, 1869. After completing his education in the public schools of that city he entered the employ of the company on October 5, 1885, and remained in continuous service until his decease. His grandfather was one of the founders of Goodyear's India Rubber Glove Manufacturing Co. and its president for a number of years. His uncle, George M. Allerton, afterwards was president; while his father, Reuben G. Allerton, was treasurer of the same company for a term of years. Atherton Allerton was a most willing, earnest and efficient worker; he was highly respected by every person with whom he associated, and his passing away is deeply regretted. He leaves a widow and young daughter.

LONG A TRENTON RUBBER MAN.

J. Howard Murray, father of Quartermaster-General C. Edward Murray, and one of the oldest rubber manufacturers of Trenton, New Jersey, died at his home in that city, December 26, after being ill several weeks due to infirmities of age. He was in the eighties.

Mr. Murray was born in New Hope, Pennsylvania, moved to Trenton in 1865 and became principal owner of the Trenton Vise and Tool Works. In 1876 he entered the hardware business, but in 1883 with his son engaged in the rubber reclaiming business. In 1888 he sold his interest in the business to his son, and went to California where he remained about eight years. Returning to Trenton, he has since that time been associated with General Murray in the Crescent Insulated Wire and Cable Co.

Mr. Murray was a charter member of Column Lodge No. 120, F. and A. M., and Past Eminent Commander of Palestine Commandery No. 4, Knights Templar, of Trenton. He is survived by his wife, one son, and three daughters, Miss Ethel M. Murray and Mrs. James V. Oliphant, of Trenton, and Mrs. William T. McVaugh, of Brooklyn, New York.

TRAVELING DISTRICT CREDIT MAN.

E. R. Howell, credit man of the Fisk Rubber Co., New York City, was found dead in bed in his room at the Athletic Club, Minneapolis, Minnesota, January 2. The verdict of the coroner's jury was that he died of heart failure.

Mr. Howell had been in Minneapolis for several days on business for the company in connection with the automobile, truck and tractor show there.

He was an old employe of the Fisk company, having started as an adjuster. Next he became an inside accountant in charge of the Atlanta branch accounts for several years, after which he took charge of credits and collections of the accounts at that branch. In the fall of 1915 he joined the credit department of the main office at Chicopee Falls, Massachusetts, as traveling district credit man, which position he filled in a most satisfactory manner until his death.

VALUED EMPLOYE OF W. H. SALISBURY & CO.

Alfred Ward Lyon, superintendent of the leather belt factory of W. H. Salisbury & Co., well-known rubber goods dealers, 308 Madison street, Chicago, Illinois, passed away on Friday, January 11, after an illness of about two months, during which, however, he kept in close touch with affairs at the factory.

Mr. Lyon was born in Auburn, New York, in 1869, where he lived through his boyhood. Later the family moved to Grand Rapids, Michigan, and there Mr. Lyons obtained his early experience in belt manufacturing. About twenty years ago another removal was made to Chicago, where Mr. Lyon and his father went into business under the name of Samuel Lyon & Son, manufacturing leather belting and distributing engine-room supplies. When the establishment of the company was burned, the younger member entered the employ of W. H. Salisbury & Co.

Mr. Lyon is survived by his mother, his widow and two brothers.

OVER FORTY YEARS WITH ONE COMPANY.

John J. Walsh, for over 40 years connected with the selling agencies of the rubber footwear trade in Boston, Massachusetts, died at the City Hospital in that city, January 20, following a surgical operation. He was born and educated at Ballincollig, an important military post near Cork, Ireland. Coming to America when a young man, he found employment at the Boston agency of the Woonsocket Rubber Co., and ever since that time, 41 years ago, he has been connected with that company or the United States Rubber Co., with which it was later affiliated. For many years he has had charge of the account of the Boston selling agency of the latter company. This position brought him in contact with all the customers of that concern who visit the Boston market, and he was personally known to people in the trade throughout the length and breadth of the country. For some years he had been in poor health, but few suspected it, because of his prompt and steady attention to his duties. He never married, but leaves four sisters and a host of business friends to mourn his loss.

PIONEER RUBBER MAN.

Francis H. Holton, a pioneer and inventor in the rubber industry, passed away at his home in Akron on January 19, at the age of 86.

For 70 years he had been engaged in the rubber trade and since 30 years ago had been with The B. F. Goodrich Co., of late years in charge of the Druggists' and Stationers' Supplies Department. He was the inventor of the soft rubber eraser and the rubber projector for soldiers' caps.

His widow and two grandchildren survive him.

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THE B.F.GOODRICH

AKRON, OHIO—The

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News of the American Rubber Trade.

POEL & KELLY SUCCESSORS TO ARNOLD & ZEISS.

THE firm of Arnold & Zeiss, crude rubber importers and brokers, having expired by limitation on December 31, 1917, Frank Poel and William J. Kelly have formed a limited partnership with F. C. J. Pusinelli, of Heilbut, Symons & Co., of London, as special partner, under the firm name of Poel & Kelly. Offices will be at 277 Broadway, New York City; 79 Milk street, Boston, Massachusetts, and 406-7 Second National Bank Building, Akron, Ohio.

THERMOID RUBBER CO.'S HOOVERIZED DINNER.

The Thermoid Rubber Co., New York City, gave a dinner on January 14, which was attended by H. F. Blanchard, sales manager; E. B. Knowles, assistant sales manager; J. N. Kirk, New York branch manager; H. R. Portugal, Cleveland, Ohio, manager; J. T. Monahan, vice-president of the National Bank of Cuba; S. H. Ritchie, of J. W. Thompson Co.; T. I. Burchell, A. R. Hodge, C. E. Scheible, E. O. Girard, F. L. Kimberly, Rene Duquet, and M. J. Winkler. Speeches were made by S. H. Ritchie, H. F. Blanchard, and J. T. Monahan. The menu would have secured Mr. Hoover's approval very easily, the principal items being fish, chicken and vegetables—all Thermoidized.

SPON-TEM IS NOW CALLED STEK-O.

The Clark Paper and Manufacturing Co., Rochester, New York, makers of powdered adhesives, largely used in rubber mills, announce that for several years their two leading brands of powder pastes, Spon-Tem and Stek-O, have been identical in composition and manufacture, and that hereafter this product will be marketed only under the name of Stek-O, and that those of their customers who have been using Spon-Tem may be assured that by ordering Stek-O they will receive the same product as before. Its advantages are many, and its uses still more numerous.

A NEW OKLAHOMA FACTORY.

The Ardmore-Akron Tire & Rubber Co., Oklahoma City, Oklahoma, is building a new factory, 90 by 300 feet, which will be fireproof and modern in every respect. The Farrell Foundry & Machine Co., Ansonia, Connecticut, will furnish the rubber machinery to be used and the electric motors are being built by the General Electric Co., Schenectady, New York. The officers of the company are: John C. Harmony, president; Elmer S. Wood, vice-president; Fox Wood, treasurer; Roy G. Wood, secretary; directors—S. A. Apple, Edward Gault, Arthur Wood, and H. M. Rogers; consulting engineer, Charles A. Besaw. The company was chartered under the laws of the State of Oklahoma in 1917, with an authorized capital stock of $1,000,000, divided into 10,000 shares of the par value of $100 each, fully paid and non-assessable, of which $500,000 is 7 per cent cumulative preferred stock and $500,000 common stock.

THE DRY CLIMATE TIRE MFG. CO. POOLS STOCK.

The Dry Climate Tire Manufacturing Co., Arvada, Colorado, at its annual meeting on December 1, 1917, pooled its stock in the hands of three trustees, as follows: J. C. Burger, vice-president of the Hamilton National Bank, Denver, Colorado; Cass Herrington, president of the Denver Commercial and Civic Association; and W. J. Barker, general manager of the Denver Gas & Electric Light Co. Directors and officers were elected as follows: Directors—G. P. McKenney, D. A. Lord, W. H. Davis, W. J. H. Doran, George S. Batty, W. J. Barker, and Harry Zimmerhackel. Of these, the first four, respectively, were elected president, vice-president, secretary-treasurer, and general manager of the company, with H. T. Sloan as assistant secretary-treasurer.

RECENT CHANGES IN THE FISK ORGANIZATION.

The Fisk Rubber Co., Chicopee Falls, Massachusetts, announces the following changes: W. B. Cole in charge of Seattle, Washington, branch—formerly salesman at San Francisco branch; William Wield, assistant to F. H. Ayers, sales manager—formerly with Hudson Motor Car Co., New York City; L. F. Marshall, manager, Toledo, Ohio, branch—formerly manager Cleveland, Ohio, branch; Rodney W. Day, manager Erie, Pennsylvania, branch—formerly at Buffalo, New York, branch; new service station opened at 2d and Monroe streets, Spokane, Washington.

DIVIDENDS.

The Converse Rubber Shoe Co., Malden, Massachusetts, declared its regular semi-annual dividend of 3½ per cent, which was paid December 1, 1917.

The Hood Rubber Co., Watertown, Massachusetts, declared a quarterly dividend of 1¾ per cent on its preferred stock, payable February 1 on stock of record January 24.

The Corn Products Refining Co., New York City, declared its regular quarterly dividend of 1¾ per cent on preferred stock of record January 7, payable January 15.

The Canadian Westinghouse Co., Limited, Hamilton, Ontario, declared its regular quarterly dividend of 1¾ per cent and an extra dividend of 1 per cent, payable January 2, on stock of record December 20.

The American Wringer Co., Woonsocket, Rhode Island, declared its quarterly dividend on preferred and common stock of record December 31, payable January 15.

The United States Rubber Co., New York City, declared its regular quarterly dividend of 2 per cent on its first preferred stock of record January 15, payable January 31.

The Standard Underground Cable Co., Pittsburgh, Pennsylvania, declared its regular quarterly dividend of 3 per cent., an extra dividend of 3 per cent, and a special dividend of 9 per cent of stock of record January 5, payable January 10.

The Kelly-Springfield Tire Co., New York City, declared its regular quarterly dividend of $1 a share on common stock of record January 15, payable February 1.

The board of directors of the Republic Rubber Corp., Youngstown, Ohio, has sent out notice to the common stockholders that it has been decided to conserve the cash resources, and therefore there will be no dividends paid on the common stock. This action, however, will not affect the policy of paying the usual dividends on the preferred stock.

RUBBER COMPANY SHARE QUOTATIONS.

The following market quotations of rubber manufacturing companies on January 25 are furnished by John Burnham & Co., 115 Broadway, New York City, and 41 South La Salle street, Chicago, Illinois.

	Bid.	Asked.
Ajax Rubber Co. (new)	49½	51¾
Firestone Tire & Rubber Co., common	95½	98½
Firestone Tire & Rubber Co., preferred	95	97
The B. F. Goodrich Co., common	43⅛	43½
The B. F. Goodrich Co., preferred	96	98
Goodyear Tire & Rubber Co., common	135	137
Goodyear Tire & Rubber Co., preferred	97	98
Kelly-Springfield Tire Co., common	42	43½
Kelly-Springfield Tire Co., preferred	75½	79
Miller Rubber Co., common	128	134
Miller Rubber Co., preferred	95	96
Portage Rubber Co.	110	114
Rubber Goods Mfg. Co., pf.	..	..
Swinehart Tire & Rubber Co.	20	40
U. S. Rubber Co., common	56	56½
U. S. Rubber Co., preferred	96	97

PERSONAL MENTION.

Colonel Samuel P. Colt, president of the United States Rubber Co., New York City, recently received from the employes of Goodyear's Metallic Rubber Shoe Co. and Goodyear's India Rubber Glove Manufacturing Co., both subsidiary companies at Naugatuck, Connecticut, a silk flag and a set of resolutions expressing their appreciation of the many benefits received from the United States Rubber Co. Subscriptions were limited to ten cents, and sufficient money was collected to purchase the flag and leave a balance of $50, which was turned over to the local chapter of the Red Cross.

C. H. Collmer, an adjuster for The B. F. Goodrich Co., Akron, Ohio, is in charge of the Bangor, Maine, branch, replacing branch manager T. Donnellan, who has resigned to go into service.

F. M. Nourse has joined the advertising department of The Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin, as technical writer. He was graduated in 1912 from the University of Illinois as an electrical engineer.

J. H. Holmes has bought the Moore Tire Shop, Blair, Nebraska, and states that it will now be known as the American Racing Tread Sales Co. It will handle new tires and do repair work.

C. W. Johnson, general superintendent of the East Pittsburgh, Pennsylvania, works of the Westinghouse Electric & Manufacturing Co., has been elected vice-president of the American Institute of Metals.

Edmund B. Siegerson has been appointed sales promotion manager of The McGraw Tire & Rubber Co., East Palestine, Ohio. He was formerly with the Goodyear Tire & Rubber Co. as salesman in New England and New York, branch manager at Albany and Buffalo, New York, and supervisor of the mid-western division of dealers' sales department at Akron, Ohio.

C. C. Halling, representative of the Pacific Trading Co., Limited, Singapore, was in New York last month.

Howard Cox, identified with the Kelly-Springfield Tire Co. from the days when carriage equipment was its sole product, and formerly manager of the company's Cincinnati branch, is to direct a newly created carriage-tire division and will still make Cincinnati his headquarters. D. E. Volker, who becomes branch manager, has for the past five or six years sold Kelly-Springfield tires for the Cincinnati branch.

The wholesale distribution of tires formerly handled by the Kelly-Springfield Omaha Co. has been taken over by George W. Hiett, who, under the jurisdiction of the Chicago branch of the Kelly-Springfield Tire Co., will take charge of a sales depot and service station established at 2046 Farnam street, Omaha, Nebraska.

E. J. Hathorne has resigned as treasurer of the United States Tire Co., New York City. His work will be carried on in future by the vice-president, W. G. Parsons, treasurer of the United States Rubber Co., New York City, assisted by W. H. Blackwell as assistant treasurer of the latter company.

H. H. Swan has been elected a director of The Pearce Tire & Rubber Co., Ashtabula, Ohio. For the last six years he has been superintendent of the tire department of the Portage Rubber Co., Akron, Ohio, and was formerly with the Kelly-Springfield Co. in the same city.

Charles L. Foster has been elected vice-president and consulting engineer of The Pearce Tire & Rubber Co., Ashtabula, Ohio.

Clyde Thompson, advertising manager of the Miller Rubber Co., has resigned and accepted the position of director of sales and advertising of the newly organized company known as The Militor Corporation 111 Broadway, New York City. A new type of motorcycle, the "Militor," will be placed on the market by this company at an early date.

H. T. Dyett, president of Rome Wire Co., Rome, New York, has been appointed a member of the Underwriters' Laboratories Industry Conference Committee for Rubber-Covered Wire and Cords.

A paper, entitled "The Financial Prospects of Synthetic Rubber," was read by Dr. Frederick Danncath before a recent meeting of the Philadelphia Section of the American Chemical Society.

Wilmer Dunbar, Greensburg, Pennsylvania, offers to the trade expert advice in the erection of rubber plants, installing equipment, eliminatjon of difficulties in the manufacture of solid and pneumatic tires, inner tubes and mechanical goods and the manufacture of reclaimed rubber.

NEW INCORPORATIONS.

Auerson Tire Corp., January 9 (New York), $50,000. M. L. Ottel, 18 East 41st street, G. R. Hamilton, 425 West 114th street and L. Breugger, 1 West 46th street—all in New York City. Principal office, New York City. To deal in tires, etc.

Banner Tire & Supply Co., December 6 (Texas), $1,000. C. V. Moore, A. C. Camp and S. J. McGlasson—all of Waco, Texas. Principal office, Waco, Texas. To purchase and sell goods, wares and merchandise.

Central Rubber Co., Inc., January 18 (New York), $200,000. P. Leggett, Nyack, New York, C. Cobb, Cedarhurst, Long Island, and C. A. Winter, 54 East 129th street, New York City. Principal office, Nyack, New York. To manufacture rubber articles.

Consumers Tire & Rubber Corp., January 15 (New York), $100,000. N. M. Blackley, 25 Beaver street, E. D. Reecks, 176 Front street—both in New York City, and A. A. Aboud, 275 86th street, Brooklyn, New York. Principal office, New York City. To manufacture tires and rubber goods of all kinds.

Curry, McPhillips & Co., Inc., December 28 (New York), $100,000. C. F. McPhillips, West Orange, New Jersey; E. G. Curry, Mountain Lakes, New Jersey, and F. E. Henning, 307 West 127th street, New York City. Principal office, New York City. To deal in crude rubber.

Danubil Co., Inc., The, January 11 (New York), $50,000. J. N. Boyle, A. S. Pratt and V. Nuchtauser—all of 61 Broadway, New York City. Principal office, New York City. To manufacture asbestos, rubber products, hose, packing, engine supplies, etc.

Duane Rubber Co., Inc., December 29 (New York), $600. E. Fried, L. Fried—both of 118 Duane street, and N. Fried, 342 East 38th street—both in New York City. Principal office, New York City. To manufacture rubber footwear, etc.

Endurance Tire & Rubber Co., November 5 (Delaware), $5,000. C. L. Rimlinger, F. A. Armstrong—both of Wilmington, Delaware, and C. M. Egner, Elkton, Maryland. To manufacture and deal in tires for automobiles, motor cars, motor trucks and other vehicles.

Government Tire & Rubber Co., Inc., January 5 (New York), $2,400. S. Bernheim, 35 Nassau street, New York City, C. A. Weldon, 591 Seventh street, and H. H. Jacobson, 373 Grand street—both in Brooklyn, New York. Principal office, New York City. To manufacture and deal in tires.

Half Sole Tire & Supply Co., Inc., January 15 (New York), $20,000. E. R. McGreevey, W. W. Webb and C. E. Rapalee—all of Geneva, New York. Principal office, Geneva, New York. To manufacture half soles for auto tires.

Hanley Rubber & Tire Co., January 15 (New Jersey), $50,000. D. M. Hanley, 412 Third avenue, Bradley Beach; M. J. Ready, 331 Turrell avenue, South Orange, and M. Hoffman, 80 Rose street, Newark—all in New Jersey. Principal office, 38 New street, Newark, New Jersey. To do a general business in automobiles, tires and automobile parts.

Iowa Rubber Shoe Co., November 17 (Iowa), $25,000. F. H. Stahmer, W. H. Emmons and E. N. Manning. Principal office, Davenport, Iowa. To manufacture and sell rubber boots, shoes

and rubber goods of any kind and character, and canvas goods along the same line.

Onyx Raincoat Corp., January 11 (New York), $25,000. S. Lesser, H. Lesser—both of 667 West 161st street, and N. A. Rubin, 101 West 112th street—both in New York City. Principal office, New York City. To manufacture raincoats.

Owen Tire Co., December 14 (Massachusetts), $40,000. W. R. D. Owen, 177 Portland street, A. Palder, 129 Columbus avenue, and J. E. Crowley, 411 Pemberton Building—all in Boston, Massachusetts. Principal office, Boston, Massachusetts. To manufacture and deal in automobile tires, automobiles, automobile parts, supplies and accessories, woven hose, rubber hose, articles of woven materials or rubber, and any articles and products made wholly or partly of rubber or leather.

Park Raincoat Co., Inc., January 12 (New York), $1,500. L. Renert, 145 E. Houston street, New York City, H. Lewis, 236 Blake avenue, and M. Rapps, 99 Chester street—both in Brooklyn, New York. Principal office, Brooklyn, New York. To manufacture raincoats.

Russell Tire Co., January 3 (New Jersey), $100,000. R. T. Binder, 37 Hampton Terrace, Orange, F. Hahl, 139 Congress street, and B. Singer, 519 South 11th street—both in Newark—all in New Jersey. To manufacture, import, export, buy, sell and deal in tires and vehicles of all kinds.

Sea Gate Tire & Rubber Co., Inc., January 5 (New York), $12,000. S. Bernheim, 35 Nassau street, New York City, C. A. Weldon, 591 Seventh street, and H. H. Jacobson, 373 Grand street—both in Brooklyn, New York. Principal office, New York City. To manufacture and deal in tires.

Transparent Rubber Goods Co., November 1 (incorporated under the provisions of the "Ontario Companies Act"), $40,000. E. Barrington and W. Vogel—both of 1555 Danforth avenue, Toronto, Canada. Principal office, Toronto, Canada. To manufacture and deal in rubber goods.

Tropical Rubber Co., November 6 (Delaware), $400,000. C. L. Rimlinger, M. M. Clancy—both of Wilmington, Delaware, and C. M. Egner, Elkton, Maryland. To manufacture and deal in tires for automobiles, motorcycles, and other vehicles.

Zertuche & Co., Inc., January 4 (New York), $100,000. R. Zertuche, M. Argueso, and F. Zegri—all of 71 Wall street, New York City. Principal office, New York City. To manufacture rubber and gutta-percha.

TRADE NOTES.

The Magnolia Metal Co., New York City, announces that the sole and exclusive selling agency for their different grades of sulphuret and oxide of antimony has been placed with Ralph L. Fuller & Co., Guardian Building, Cleveland, Ohio, and 2 Rector street, New York City.

The Williams Foundry & Machine Co., Akron, Ohio, is completing a new tire repair plant which will increase the company's capacity about 50 per cent. The building is 275 by 40 feet, three stories in height, and will be finished early in February.

The Cincinnati Rubber Manufacturing Co., Cincinnati, Ohio, has added a fiber sole and heel department in charge of Ashley Kennedy.

The Wilson Rubber Co., Canton, Ohio, is building a new factory at 1216-1236 Garfield avenue, which will double or treble the capacity of the plant. The company manufactures high-grade electricians', surgeons' and household rubber gloves.

W. J. Byrnes & Company, rubber custom house brokers at 405 Washington street, San Francisco, California, announce the incorporation of the firm under the name of W. J. Byrnes & Co. The officers of the corporation are W. J. Byrnes, president; E. A. Lisfeldt, vice-president; J. A. Bainbridge, secretary; N. S. McNulty, treasurer.

The Vul-Tex Co., Akron, Ohio, is planning a new factory building to quadruple its present capacity. It manufactures rubber and fiber soles and heels, all kinds of mechanical rubber goods as well as those of artificial leather. Its specialty in the heel and sole business is a fiber tap or half-sole which can be either nailed on or sewed. The factory is at Barberton, Ohio. The officers are: Emil Gammeter, president; J. S. Benner, secretary; J. F. Johnston, superintendent.

The Stungo-Radium Rubber Co., Washington, Pennsylvania, has changed its name to Washington Rubber Co. of Pennsylvania. The management remains the same.

The W. D. Allen Manufacturing Co., Chicago, Illinois, has been supplying its brass spray nozzles, steel hose clamps and other patented specialties used in connection with rubber fire hose, to cantonments, aviation camps, navy yards and other government plants. For the benefit of local jobbers a New York branch and stock room are maintained at 69 Warren street, in charge of A. L. Boerner.

R. M. Lowenthal & Co., Inc., New York City, dealer in scrap rubber, has increased its capital stock from $200,000 to $250,000. By the purchase of the building and property at Babcock and McKinley streets, Buffalo, New York, the company now has what is probably the largest plant devoted to the handling of tire scrap materials. The structure contains 40,000 square feet of ground floor space, and there are also 40,000 square feet of yard space and a seven-car siding from the Pennsylvania railroad which the property fronts.

The Batavia Rubber Co., Batavia, New York, has elected as chairman of its board of directors and general manager, respectively, Maxwell H. Bochow, formerly assistant treasurer of the Metropolitan Trust Co., and Thomas W. Dynan, formerly credit manager of the Metropolitan Trust Co., New York City.

Rex-Hide Rubber Mfg. Co., East Brady, Pennsylvania, gave each of its employes a full day's pay at Christmas. This concern is probably the largest plant making fiber soles and toplifts exclusively.

Thermoid Rubber Co., Trenton, New Jersey, is being represented in New York State by C. E. Scheible and E. O. Girard, and in Greater New York by A. R. Hodge, who has recently returned to the company after two years' service with the English Army in France. F. L. Kimberley is the company's representative in Connecticut, and the Philadelphia, Pennsylvania, office has recently engaged W. E. McDonough and W. E. Sultan.

The United States Rubber Co., New York City, has opened a branch store at Ross avenue and Austin street, Dallas, Texas, for the sale of rubber footwear, "Keds" and "Raynsters."

The Pennsylvania Rubber Co., Jeannette, Pennsylvania, has moved its Philadelphia office to 209 North Broad street, under the management of D. D. F. Yard, formerly manager of the company's Atlanta, Georgia, office.

The Republic Rubber Co., Youngstown, Ohio, announces the following appointments: J. P. Reed, general manager of sales, Pacific Coast; J. C. Clifford, sales manager pneumatic tire department, Pacific Coast; W. P. White, sales manager mechanical goods department, Pacific Coast, Spokane, Washington.

Professor H. H. Bartlett, University of Michigan, has left for the Dutch East Indies to assume his duties as physiological botanist on the 100,000-acre rubber plantation owned by the United States Rubber Co., New York City.

DE LISSER BUYS FACTORY PROPERTY AT GREENPOINT.

The property formerly occupied by the American Sugar Refining Co., at Greenpoint Creek and the East River, Greenpoint, opposite 23rd street, New York City, and valued at $2,000,000, has been purchased by Horace De Lisser. The transaction is a personal matter and in no way connected with the Ajax Rubber Co.

The Greenpoint purchase adjoins the state barge canal terminal and contains several old brick and frame buildings and about 170 lots, having a frontage on the creek and river of 900 feet and average dimensions of about 470 feet on its other two lines.

TRADE NOTES.

The Empire Rubber & Tire Co., Trenton, New Jersey, has built additions to its plant at a total cost of about $220,000, of which $40,000 was spent on a new building for increased tire production, the balance being invested in machinery. The company has added to its board of directors J. E. Fraser, mechanical engineer, New York City; W. W. Sanders, chemical expert, and C. Edward Murray, Jr., factory manager.

The General Tire & Rubber Co., Akron, Ohio, announces the removal of its agents, the F. & F. Tire & Supply Co., Cleveland, Ohio, from 1922 to 1921 Euclid avenue, in the heart of the tire district.

Bittel-Leftwich, St. Louis, Missouri, distributor and jobber handling automobile supplies and accessories and the well-known "Dreadnaught" tires, has just completed a large building at Kansas City, Missouri, has opened a sales office in Little Rock, Arkansas, and maintains branches in Springfield and Decatur, Illinois, in addition to a sales force covering Missouri, Arkansas, Kansas, Oklahoma, and southern Illinois. The company's sales for 1917 exceeded $1,000,000, and it anticipates doubling this during 1918.

The Globe Rubber Tire Manufacturing Co., New York City, announces the appointment of W. P. H. Reilly, formerly Pacific Coast sales manager of the Ajax Rubber Co., as its special representative in New York.

The Boone Tire & Rubber Co., Sycamore, Illinois, and Chippewa Falls, Wisconsin, has practically completed its new plant at the latter place, but expects to erect another building during the coming year, 200 by 360 feet, two stories in height, which will have a daily capacity of 2,000 tires. A factory branch has been opened at Waco, Texas, where a factory will be built in the near future. The company has consolidated its sales departments at its office at 1242 First National Bank Building, Chicago, Illinois.

The Buckeye Tire & Supply Co., Columbus, Ohio, has increased its capital from $6,000 to $50,000, $30,000 being paid in. The company plans to enlarge its quarters and sales force to care for increasing business.

The Crown Tire & Rubber Co., Ralston, Nebraska, has just finished a new tire factory which will have a daily capacity of 500 tires and tubes. The officers of the company are: H. A. Reichenbach, president; J. G. Adams, vice-president; J. B. McDonald, secretary and treasurer; A. P. Johnson, general manager; and J. S. Lyons, general sales manager. These officers are also the directors.

The Gillette Rubber Co., New York City, is enlarging its plant at Eau Claire, Wisconsin. A new warehouse 66 by 100 feet is being built, and a new machine shop constructed, two stories high, 80 by 150 feet, for building molds and cores for the use of the company. The capacity of the plant has been increased about 50 per cent by the further addition of two 350-horse-power boilers to its equipment.

The Ideal Tire & Rubber Co., Cleveland, Ohio, has increased its capital stock from $1,000,000 to $2,000,000 in order to enlarge its tire production to 1,000 tires daily. It is now perfecting a new cord tire to be put on the market shortly after the completion of its factory, probably in about three months.

The Pearce Tire & Rubber Co., Ashtabula, Ohio, has completed its two-story plant, 76 by 180 feet, having floor space covering 24,000 square feet and fronting the New York Central Railroad tracks for 1,250 feet. The company holds 17¾ acres. A new stack, 110 feet in height, is now being constructed on the powerhouse, and a warehouse 40 by 75 feet is to be built as soon as weather permits. Operation will be effected by April 1, it is expected.

Ralph S. Grubb, general manager of Grubb & Co., 908 Orange street, Wilmington, Delaware, has opened a shop to carry motor car necessities and has secured the agency for the Michelin tire. Mr. Grubb was formerly secretary and treasurer of the A. B. Rothacker Rubber Co., Inc.

The Kelly-Springfield Tire Co., Seventh avenue and 57th street, New York City, announces the opening of a new branch at 426 Jefferson street, Milwaukee, Wisconsin, in charge of J. A. Glaspy, to facilitate the handling of both solid and pneumatic tires. It is also a fully equipped service station.

Carlisle Cord Tire Co., New York City, has appointed Charles H. Minto as western district sales manager, with headquarters in San Francisco, California. He is probably one of the best known tire salesmen in that state. H. M. Hernandez has been appointed central district sales manager. He was formerly connected with the United States Tire Co.

The Mason Tire & Rubber Co., Kent, Ohio, has established truck service between its factory and its distributor at Pittsburgh, Pennsylvania, to relieve the freight congestion.

The Norwalk Tire & Rubber Co., Norwalk, Connecticut, has completed two new additions to its factory, each costing about $30,000.

The Savage Tire Corp., San Diego, California, announces the appointment of J. W. Darrow as manager of the Dallas, Texas, branch and of A. E. Kelley as manager of the new Seattle, Washington, branch.

The Malcolm Tire Co. has opened at 82 N. Broadway, Portland, Oregon, a distributing station and salesroom for tire seconds, and will cover the territory of Oregon and Washington. It will specialize on the product of the Automobile Tire Co., Inc., of New York City and Los Angeles, California, and in addition to seconds will feature as a first the "Beacon" tire, manufactured by the Beacon Tire Co., Beacon, New York.

The Polack Tyre & Rubber Co., New York City, has opened a new branch at 1474 Main street, Buffalo, New York, under the management of George M. Kraus. The company announces the following changes of address of other branch offices: 27 Frelinghuysen avenue, Newark, New Jersey; service station at 116 C street, N. W., Washington, District of Columbia.

The Pearce Rubber Corp., of Philadelphia, Pennsylvania, has taken over a new plant containing 54,000 square feet of floor space, equipped with the most efficient machinery possible to obtain. It is said that the new factory has a daily capacity of 5,000 tires.

The Prospect Tire and Accessory Co. has leased space in the new Hotel Winton, Cleveland, Ohio, for five years at a total rental of $10,000.

The Mansfield Tire & Rubber Co., Mansfield, Ohio, has presented to the families of employes who have joined the colors a *fac simile* of the Roll of Honor installed in the office and factory as a mark of respect to the men who have joined the fighting forces.

The general offices of the Perfection Tire & Rubber Co., previously located in the Marquette Building, Chicago, Illinois, are said to have been moved to Fostoria at Fort Madison, Iowa, the location of one of the company's principal plants.

J. G. Cochrane, who has for several years been identified with the sale of automobile accessories, has been made assistant general sales manager of the Savage Tire Corp., San Diego, California. Mr. Cochrane is well known on the Western Coast to which most of his sales activities have been confined.

The Charles E. Miller Rubber Co., Anderson, Indiana, recently distributed profit-sharing checks among employes in the service of the company not less than one year. The checks are said to have ranged from $300 to $360, according to the period of employment.

The Star Rubber Co., Akron, Ohio, has opened a Chicago branch at 1720 Michigan avenue. It is in charge of Edward Merkle, previously identified with the Federal Rubber Manufacturing Co. and the Knight Tire and Rubber Co.

O. L. Weaver, secretary and sales manager of the Star Rubber Co., has been to the Pacific Coast, arranging for distribution in that territory.

The Shenango Tire Co., Inc., Dover, Delaware, which was incorporated in August last, as noted in our September issue, has changed its name to the Aeonite Tire Co., Inc.

The Cleveland Tire & Rubber Co., 309 North 15th street, Philadelphia, Pennsylvania, has secured the agency for "Arcadia" tires manufactured by the New Jersey Car Spring & Rubber Co., Jersey City, New Jersey.

The United States Rubber Co. has opened a Brooklyn branch at 1418 Bedford avenue. These warerooms, which have been elaborately fitted up, are in charge of John M. Musson, who began his automobile tire experience with the G. & J. Tire Co., now a subsidiary of the United States Rubber Co.

The Dayton Rubber Manufacturing Co., Dayton, Ohio, recently received a record order involving $80,000 worth of airless tires to be shipped to New Zealand and Australia.

Western Tire & Battery Co., Hutchinson, Kansas, has leased the ground floor of the I. O. O. F. Building and will handle Federal tires and act as the Prest-O-Lite battery service station.

The Fisk Co. of Texas, dealer in Fisk tires and automobile accessories, San Antonio, Texas, has appointed Leonard D. Ormsby sales manager. The company has offices at Houston and Dallas, as well as at San Antonio. This is not a branch of the Fisk Rubber Co. of Texas.

The Pacific Tire & Rubber Co., 445-447 Stark street, Portland, Oregon, has organized as a wholesale and retail distributor of the Carlisle Cord and Gordon tires throughout the state of Oregon and will also carry a complete line of accessories. The officers are: J. G. Howell, president; M. F. Swift, secretary and treasurer.

The Independent Tire Co. of Ohio, Columbus, Ohio, has increased its capital stock from $10,000 to $50,000. The officers and stockholders remain the same. The company also controls the Independent Tire Co. of Tennessee, Memphis, Tennessee. The concern acts as a jobber of all standard makes of second tires.

The Hartford, Connecticut, branch of the Goodyear Tire & Rubber Co., of Akron, Ohio, was recently burned with total loss of stock and building, but by requisitioning new stock from a neighboring branch, the business of the office opened as usual the following morning.

The Lee Tire & Supply Co. has removed from 3 Fountain street, N. W., to 30 Ionia avenue, S. W., Grand Rapids, Michigan.

The Fisk Rubber Co., Chicopee Falls, Massachusetts, has promoted E. S. Maloney to the position of manager of its branch at Richmond, Virginia. He was formerly a salesman in that territory and succeeds J. A. Horner who resigned to enlist.

The Fisk Rubber Co. stores in various cities are displaying a miniature of the company's service flag containing 416 stars.

Andress Auto Supply, 1203 Fifth avenue, Moline, Illinois, has been opened as an automobile accessory store by W. J. Andress, formerly a salesman for the Firestone Tire & Rubber Co. The new store carries the agency for the Miller tire and does vulcanizing.

The General Tire & Rubber Co., Akron, Ohio, has reorganized its sales department covering tire accessories and repair materials under H. G. Ault, formerly with the Firestone Tire & Rubber Co. The company will shortly present several new tire accessories and repair materials to the trade.

Contrary to current reports, the Manhattan branch office of the Pennsylvania Rubber Co., Jeannette, Pennsylvania, is still maintained at 1889 Broadway, New York City.

Duplex Tire Co., formerly at Davenport, Iowa, has removed to 218-220 Mulberry avenue, Muscatine, Iowa.

Sioux City Tire & Manufacturing Co., Sioux City, Iowa, has increased its capital from $220,000 to $1,100,000, of which $1,000,000 will be preferred stock and $100,000 common.

The Mason Tire & Rubber Co., Kent, Ohio, will remove its offices to the new factory building. This structure will include a printing plant in the basement and the part of the present plant occupied by the offices will be devoted to the manufacture of tires.

New machinery is to be installed by the Westerly Textile Co., Westerly, R. I., tire cloth manufacturers. For the purpose of purchasing this machinery, the capital stock was increased to $300,000. There are 118 broad and 64 narrow looms in operation.

W. D. Crawford has accepted a position in charge of the tire fabric weaving for the Jenckes Spinning Co., Pawtucket, R. I.

CANADIAN NOTES.

GUTTA PERCHA & RUBBER, LIMITED, 47 Yonge street, Toronto, Ontario, on January 12, withdrew all prices on rubber footwear except tennis lines, and issued a revised list on January 15, showing an increase in prices of 10 to 15 per cent.

The Dunlop Tire & Rubber Goods Co., Limited, Toronto, Ontario, has added two new 250-horsepower boilers to its power-plant equipment.

K and S. Canadian Tires, Limited, Toronto, Ontario, has appointed as manager of its new druggists' sundry plant M. S. Hannon, formerly with the Faultless Rubber Co., of Ashland, Ohio.

Harold Greene, for some years in the employ of Gutta Percha & Rubber, Limited, 47 Yonge street, Toronto, Ontario, at its Winnipeg, Toronto, and Montreal branches, has now been promoted to the position of assistant manager of the Ottawa, Ontario, branch.

The new rubber shoe season in Canada opens on February 25.

ANDREW ALEXANDER ALLAN.

ANDREW A. ALLAN, who was recently elected to the Board of Directors of the Canadian Consolidated Rubber Co., Limited, Montreal, Canada, is a prominent man in Canadian industries, and his election to this board is one which cannot fail to add further efficiency to that enterprising corporation. Mr. Allan comes of a distinguished family, being the son of the late Andrew Allan, one of the founders of the Montreal Ocean Steamship Co.

A. A. ALLAN.

He was born in Montreal, June 16, 1860, is a graduate of the Montreal High School, and was also educated in France by private tutors and at Rugby. He is a man of wide interests, being president of the Canadian Marconi Co., Limited; vice-president of the Dominion Oil Cloth Co., Limited; director, Merchants Bank of Canada; director, British and Colonial Press Service, Limited; chairman, Shipping Federation of Canada, and Life Governor of the Montreal Western Hospital.

GLOBE RUBBER TIRE MANUFACTURING CO. USES CLOSING TO ADVANTAGE.

The Globe Rubber Tire Manufacturing Co., New York City, utilized the five days' closing ordered by the Fuel Administration, in making improvements at its factory at Trenton, New Jersey. The changes had been contemplated for some time but, as it was necessary to shut down the factory in order to make them, the officers had postponed action as long as possible. The requirement of the Fuel Administration, in this case, afforded the opportunity.

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

THE Fuel Administrator's order closing industrial plants for five days struck Akron a terrific blow. Forty thousand men and women employed in the rubber plants here were thrown out of work and a daily loss in wages amounting to $500,000 followed.

The first day the order took effect not a department in any rubber plant was operated and only enough men to guard the factories and care for machinery were kept on duty. The remainder of the workers were sent home with instructions not to report until Tuesday, January 29.

Plants working on large war orders for the Government immediately protested against the order and The B. F. Goodrich Co. and the Goodyear Tire & Rubber Co. were exempted in so far as to permit the production of gas masks. Only this department was permitted to operate, all other departments in both plants coming under the general order, even though war materials were being manufactured.

The Akron companies had been handicapped by the shortage of coal before the order was issued and on several occasions had been forced to close departments when the Northern Ohio Traction and Light Co. failed to furnish power. Some relief was afforded, however, by the request of the Fuel Administration to coal operators to increase shipments of coal into Ohio and Michigan for 10 days after January 14.

* * *

The General Tire & Rubber Co. has completed a new 80 x 144-foot addition to its East Akron factory. A corps of experts is engaged in placing the new equipment in the south wing and in rearranging the machinery throughout the plant.

The new wing houses the department where the final inspection is given and the tires are wrapped and labeled. It also contains the stock rooms and shipping department, so that the entire second floor can now be occupied by the tire building department. The expansion of the latter department has been essential since the company added cord tires to the line it manufactures.

AMERICAN HARD RUBBER CO.'S NEW PLANT, EAST AKRON, OHIO.

* * *

One of the biggest fees ever paid to the state of Ohio for an increase of capital stock was that which the Goodyear Tire & Rubber Co. sent to Columbus January 15. A check for $50,000 was paid the state when the capital stock of the company was increased from $50,000,000 to $100,000,000.

When the Goodyear Tire & Rubber Co. started in business in 1898, the total working capital was $45,000 and the total working force was 100 men. To-day the total force employed in the Akron plant is close to 20,000. About 2,000 more are employed in the various branches, factories, cotton plantations and fabric mills elsewhere. The increased capital is needed to take care of large government orders and increased amounts of crude materials.

Goodyear employes unable to get fuel from city establishments have been well supplied by the Housing and Financing Bureau of the factory. The coal has been distributed in one and two-ton lots.

Of the 1,180 pupils enrolled in the Goodrich school for coming Americans, during the last 10 months, 567 have learned to read and write the English language. The classes were made up of 30 different nationalties.

* * *

At the annual meeting of the Portage Rubber Co., held at the factory offices in Barberton, the board of directors was increased from three to seven. James Christy was re-elected president; M. S. Long, vice-president; L. E. Larson, secretary, and W. W. Weilman, treasurer and general manager. Each of these officers, except the secretary, is a member, ex-officio, of the board of directors. Other directors elected were J. D. Law, John Kersch, Phillip H. Snyder and O. F. Werdy.

The annual report of the company shows an increase in sales of 80 per cent over 1916, and a profit increase of 133 per cent. The company's assets are listed at $3,666,993.35, the chief items being raw stock on hand, in process through the plant, or in finished stock worth $1,599,294.45. Real estate is listed at $626,-189.20, and trademarks, patents and good will at $299,520. The company's surplus is set at $439,864.31.

The chief liabilities are listed as notes payable, $300,000; accounts payable, $77,516.34; reserve fund, $2,050.20 (depreciation); capital stock (preferred), $425,612.30; capital stock (common), $2,421,950.20.

The total sales for 1917 reach $3,361,615.16, and the figure for 1916 is given as $1,867,843.77. The total profits for 1917 were $540,933.70, while 1916 showed only $232,286.07.

* * *

The recently completed plant of the American Hard Rubber Co. is located in East Akron, Ohio, on the little Cuyahoga river, and is most modern in construction and equipment. The building is two stories in height and forms a hollow square, 400 feet long on each side, with small, one-story buildings in the court formed by the outside buildings. The total floor space is 280,000 square feet.

The manufacturing processes are grouped in two principal departments, supplied by crude material from a central distributing point. The office is located on the second floor and is up-to-date in all its appointments. The power plant occupies two buildings located west of the main buildings, and is equipped for supplying 1,000 horse power. Shipping facilities are ample, and the coal is delivered on the siding adjacent to the power plant. The plant is equipped with fire pumps, sprinklers, and other modern fire protection appliances.

LAWRENCE G. ODELL MARRIES.

Lawrence G. Odell, crude rubber buyer of the Goodyear Tire & Rubber Co., Akron, Ohio, was married January 31, at St. Patrick's Cathedral, New York City, to Alice Berlage, daughter of Mr. and Mrs. Robert J. Fellner, of New York City.

* * *

The Firestone Tire & Rubber Co. has designed a special blow-out patch for exclusive distribution through the jobbing houses of the country.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

MEMBERS of the Rubber Association of America may remember the jolly outing held at the Belmont Springs Country Club at Belmont, a few years ago. They may be interested to know that there now remains standing of the big three-story clubhouse only three tall bare brick chimneys. The management had prepared for an elaborate celebration on New Year's Eve, with covers for 275 members and guests, but at 5.30 in the afternoon of December 31, fire was discovered. The firemen on arriving, found lack of hydrant water, and after chopping a hole through 19 inches of ice on the lake, found no water under it. They could only stand by and see the big building burn to the ground. The loss is estimated around $40,000, but covered by insurance.

* * *

The business of the Dunbar-Daggett Co., dealer in crude rubber, shellac, waxes, etc., is being liquidated, and J. Frank Dunbar, who assumes the liquidation, will take over the entire business. While the Boston office is being continued, Mr. Dunbar has already moved to New York City, making his headquarters at 82 Beaver street, the former address of the Dunbar-Daggett Co. One reason for this change is the possibility of a call to war service of J. Frank Dunbar, Jr., who has hitherto had charge of the New York office. The young man has endeavored to enter the aviation service, but did not fulfil all the requirements of that division. The Boston office at 201 Devonshire street is, at present writing, in charge of L. C. Holbrook, who has been associated with the business for a long time.

* * *

Announcement has already been made of the sale of the Boston Belting Co. and the formation of a new organization to continue the business. On December 27, about 70 old-time employes of the company gave a dinner to the retiring president, Thomas Alexander Forsyth, a feature of the occasion being the presentation of a handsome loving cup, appropriately inscribed, by the old-timers, the presentation speech being by R. B. Adams, superintendent of the factory.

PRESENTED TO T. A. FORSYTHE

In accepting this token Mr. Forsyth spoke feelingly of the loyalty of all the men who had worked so closely beside him during his fifty-one years from office boy to president. He gave a brief outline of the early struggles in making rubber goods, and mentioned that the Boston Belting Co. was the oldest rubber concern in existence. The Hancock Co., of England, was just one year behind. He recalled many adventures of fire and flood which he and his brothers survived. He brought to mind how the heavy iron rollers for paper-making machines were made in Bridgewater and carted to Roxbury by ox-team, to be covered with rubber at the mill. Names like Goodyear, Haskins, McBurney, Durant, Cheever and Converse were all early associated with the Boston Belting Co.; in fact, Mr. Forsyth claimed that practically every rubber company in existence in this country to-day is an offshoot from the original company at Roxbury. Moreover, James Bennet Forsyth, the predecessor of Thomas, was the inventor of much of the rubber machinery in use to-day, which has remained practically unchanged since the final improvements made by that brother's brilliant genius.

The evening passed with music, song and story telling; some of the old-time reminiscences were indeed interesting. There were many present who had served 30 to 40 years with the company. Only one man outdated Mr. Forsyth in length of service, his record being 52 years, one year longer than that of the retiring president.

Mr. Forsyth will hereafter devote his entire energies to the Forsyth Dental Infirmary, the Boston City Hospital and the Forest Hills Cemetery Association, as has already been mentioned in these columns.

* * *

On January 1, 1918, the board of directors of the Boston Woven Hose & Rubber Co. offered to all its officers and salaried employees, whose salaries were at the rate of $1,200 per year and over, an opportunity to subscribe for shares of the company's common stock in accordance with a plan announced on that date.

Several hundred shares are to be set aside yearly for a period of years. The first issue will be alloted on a basis of salary and length of service, subsequent issues, on a basis of salary only; each individual share being that portion of the total allotment which is determined by the ratio his salary bears to the total salaries of those participating.

The stock is being offered at 20 per cent under the market price and employes are given an opportunity to subscribe for one-half or the total amount of the portion allotted to them. A certain percentage of the employe's salary will be deducted for payment of the shares taken, all dividends to be applied toward the payment of the stock. The management, in order to encourage the War Savings campaign, has distributed to all employes Thrift Cards with one or more stamps thereon, the number of stamps being governed by the length of service of each recipient.

* * *

Last week an explosion from some unknown cause occurred in the plant of the American Rubber Co., Cambridge, resulting in a considerable loss, and the serious injury, possibly fatal, of one workman. The fire was confined to a small space, but the heat started automatic sprinklers in adjacent departments, causing considerable damage, and it was at first feared that the machinery was severely damaged. However, the prompt and energetic action of the fire department saved the big plant, and no very serious delay is likely to result, for such work as cannot be continued at the Cambridge plant can readily be transferred to the Stoughton plant of the company.

* * *

The Fisk Rubber Co., Chicopee Falls, this state, is inaugurating a safety campaign under the direction of a special committee. Throughout the plant safety bulletin boards have been placed on which is shown information relating to prevention of accidents, and actual photographs of dangers to be avoided. Thirty boxes are placed near as many bulletin boards and the employes are invited to deposit suggestions for measures to prevent accidents, and to insure comfort as well as safety for workers. Many valuable ideas have already been sent in, and all that are considered advisable and practical will be passed upon by the committee with a view to adoption.

* * *

Boston makes many claims for priority in industries, and now puts forward a claim to be the location of the pioneer rubber stamp business in America. This is based on an advertisement of the Boston Hand Stamp Co. in the Boston Almanac of 1856. This advertisement announced "flexible hand stamps (Ruggles' patent) capable of making one hundred impressions per minute in the hands of any operator." There have been a number of claimants for the honor of being the father of the rubber stamp, yet all previous ones give later dates than 1856, so those who are in position to judge believe that M. R. Bigelow, agent, must have been the real pioneer—until some older record is discovered.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THE rubber industry of Rhode Island, with its large accumulations of orders—regular and rush—finds itself further handicapped through the drastic order of the National Fuel Administrator to close five days from January 18 to 22, inclusive, and every Monday for ten weeks. Several of the plants had previously had more or less difficulty because of the coal stringency, and some of them had been closed for lack of fuel on one or more occasions.

All the plants are still working on full schedules, with increasing orders on hand and no indications of any immediate cessation in the demand. The problem of obtaining help, either skilled or unskilled, confronts and perplexes the officials, and the difficulty is constantly growing more and more serious. Even the unusually high scale of wages paid fails to induce sufficient numbers to operate all the machinery and departments desired.

* * *

The Bourn Rubber Co., Providence, reports business far in excess of its present capacity. Ground has been broken for a new $40,000 wire mill on Waldo street, and the contract for its erection has been awarded. The new building will be of brick, one story high and 162 by 100 feet in size, with skylights to provide additional light. There will be a boiler extension on the rear 40 by 20 feet. Offices, testing room, receiving and shipping departments, and rooms for the insulating, braiding, vulcanizing and finishing departments will be located in the new mill. Power will be furnished by individual motor drive. The entire equipment is to be of the most modern type used in the manufacture of rubber-covered wire of every description, and will call for nearly 100 operatives. The company's original mill on Westfield street will continue the manufacture of rubber boots and shoes, added space for which will be afforded by the removal of the wire machinery to the new building. The company has also purchased land adjacent to the mill to permit of such expansion as may be necessary in the future.

Extensive alterations and improvements are being carried out at the plant of the Mechanical Fabric Co. that will greatly increase the capacity and facilities of the company in the conduct of its rapidly increasing business. An additional story to the main building has just been completed and work is now proceeding upon a two-story brick elevator well, 8 by 10 feet.

* * *

Albert E. Sparks, Jr., bookkeeper at the office of the National India Rubber Co., Bristol, has resigned his position and enlisted in the United States Navy at Newport as a yeoman.

Charles O. F. Thompson, for several years in the office of the National India Rubber Co., at Bristol, has taken a position in the office of the Union Trust Co. at Providence.

Andrew W. Anthony, manager of the topping room at the factory of the National India Rubber Co., Bristol, has resigned to become a boatswain's mate in the United States Naval Reserve Corps. Mr. Anthony married a niece of President Samuel P. Colt, of the United States Rubber Co.

A service flag has been displayed over the main entrance of the plant of the National India Rubber Co., Bristol, bearing 99 stars, representing that number of employes of the company who are in the Federal service.

Wendell R. Davis, purchasing agent for the National India Rubber Co. for many years, has been granted a prolonged leave of absence, to extend probably during the present war, as he has received an appointment as secretary of the Young Men's Christian Association for service in the war zones abroad. He expects to leave for Europe in a short time.

* * *

The American Waterproof Raincoat Co., 115 Wickenden street, Providence, has discontinued business.

The Majestic Tire Co., corner of Washington and Empire streets, Providence, is being conducted by Benjamin Trivus and Samuel Trivus.

* * *

M. Frank Hayes, of Pawtucket, who at the time of his enlistment in the Fifteenth Company of the Rhode Island National Guard, now stationed at Springfield, Massachusetts, was overseer of the rubber covering department at the Phillips Insulated Wire Co.'s plant, has been promoted to a captaincy.

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The capital stock of the Marvel Rubber Co., of Providence, has been reduced from $500,000 to $100,000 by a vote of the stockholders in special session.

* * *

Albert S. Haywood, Clara A. Haywood and Royal E. Gladding, of Providence, have been granted articles of association under the laws of Rhode Island to incorporate the Haywood Rubber Co., Inc., to engage in selling and dealing in rubber and leather goods, with a capital stock of $15,000.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent.

WITH characteristic loyalty, the rubber manufacturers of Trenton complied with the order of Fuel Administrator Garfield and suspended operations for five days commencing January 18. During that period not a wheel moved in the Trenton plants, with one exception, that of the Luzerne Rubber Co., and, though approximately 12,000 workmen were thrown temporarily out of employment and the general loss was estimated at $100,000, there was not a protest. The order acted as an acid test for patriotism and the rubber industry in Trenton was found worthy.

For weeks manufacturers have been struggling against the shortage of fuel, and despite their greatest efforts the business depression increased until it was stated by an authority that the plants were operating at 25 per cent below capacity production. Then came the fuel administration's ruling and the situation become intense, but the manufacturers are courageously facing the difficulty of supplying the demand and are being given the hearty support of their employes.

There has been excellent cooperation among the different firms, and a most commendable trade harmony has been shown in the crises through which manufacturers have been passing during the past month. John S. Broughton, president of the United & Globe Rubber Manufacturing Cos. who was appointed fuel administrator for Central New Jersey, where the largest factories are located, has been given earnest support and aided materially in the distribution of coal. John A. Lambert, treasurer and general manager of the Acme Rubber Manufacturing Co., and president of the Rubber Manufacturers' Association, has been appointed chairman of the Chamber of Commerce Committee on Industries, and credit is largely due these two men for not allowing the conditions to become demoralizing. Through Mr. Lambert's direction a plan of transferring coal to different plants where the need was the greatest was effected, and the idea has been of great benefit.

* * *

The Ajax Rubber Co. has felt greatly the effect of the fuel scarcity. This plant draws a supply of water from the Delaware and Raritan canal and when that stream froze operations were greatly hampered. Hardly had the difficulty been overcome when the supply of coal diminished, operations could be continued only partially, and workmen were laid off. The Globe Tire Manufacturing Co. found itself in the same predicament and followed a similar course, but it is expected that the condition will soon be remedied.

Bruce Bedford, president of the Luzerne Rubber Co., on the third day after the fuel ruling went into effect, received word from Washington that the company had been exempted—the only plant in Trenton—and proceeded at once to continue the production of hard rubber discs for the Aeronautical Engine Co. The company had suffered from lack of coal, but has now received a shipment sufficient, it is believed, to fill the order.

* * *

It was announced in the January issue of THE INDIA RUBBER WORLD that the Public Service Corporation of New Jersey intended to discontinue supplying industrial plants using its current after 4:30 o' clock in the afternoon. While the rule was not applied strictly at that hour, lights and motive power were suddenly cut off at 5 o'clock on numerous occasions. Announcement was made by the corporation on January 10 that its generating plant at Burlington was without coal, and immediately every industrial plant in south and central New Jersey supplied by Public Service current was forced to a half-time schedule. This condition prevailed ten days, until finally coal arrived. Since that time the situation has been fairly satisfactory.

* * *

Rubber companies that manufacture hose, belting and packing have received a large number of orders during the month and when the coal situation has become more nearly normal will be operating at full capacity. The United & Globe Manufacturing Cos., which supply these articles to the government and railroad companies, have been favored with several priority orders. Conditions are fair among the automobile tire manufacturers, who, however, expected a dull season during the winter months.

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The officials and employes of the rubber companies during the past month made their annual contribution to the Trenton Day Nursery, an institution that cares for children of working mothers, and it was reported that a liberal sum was raised.

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Patriotism of the highest caliber has been shown by Quartermaster General C. Edward Murray, treasurer of the Crescent Insulated Wire and Cable Co. One of the most prominent rubber manufacturers in Trenton, he has practically forsaken his business interests to serve the Government in a military way. General Murray has also been one of the leading spirits in the different war campaigns conducted in the New Jersey capital, to all of which he has given financial support. When the Trenton Council, Knights of Columbus, invited him to lead one of its two teams in the drive to raise the city's quota of $20,000 for the K. of C. War Recreation Fund, he immediately accepted and contributed $1,000.

* * *

The India Rubber Co., whose plant is located on Washington street, New Brunswick, New Jersey, has taken a two-year lease of a large brick building on Neilson street, New Brunswick, with the privilege of leasing for four years. The building will be used for war work and a considerable amount of machinery will be installed by the company.

* * *

C. Edward Murray, Jr., factory manager of the Empire Tire and Rubber Co., has been made a director of the company and honored with the vice-presidency. Other new directors are: W. W. Saunders, chemical expert of the Trenton plant, and J. E. Frazer, mechanical engineer of the New York Central Railroad. At Christmas time 500 shares of capital stock of the corporation were distributed among 56 foremen. Each of the 110 members of the office force received a $5 gold piece.

RUBBER FOOTWEAR PRICES.

THE United States Rubber Co., New York City, sent its new shoe price-lists to the jobbing and retail trade on January 1. There are some important changes from 1917, perhaps the most important being the reduction of discounts. Last year the discount allowed retailers was 15 per cent, with an extra 5 per cent for early orders. This year the discount is 8 per cent, and no extra discount for early orders. The terms to jobbers included an extra discount, which was their profit for handling, and this is probably the same as last year, but the terms are not available for publication.

As regards gross prices, many lines are advanced 5 to 10 per cent, while fabric goods show in some cases 25 per cent advance, caused, it is claimed, by the higher cost of cashmerette and other textiles used in their manufacture. Taken as a whole the advance is hardly as great as the trade expected.

The company, in sending out its price-lists, makes the following statement:

During the year just elapsed, we have manufactured goods under extremely trying conditions and have been unable to increase the amount of our output as much as we would like to have done, or as much as was required by the legitimate demand. In distributing our footwear during the year, we endeavor to give each one of our customers a fair portion of the goods we have made. The deliveries of certain styles on the orders have been far less than the average of all styles, because of the difficulty in producing those particular styles in average quantities. This has caused a more or less uneven filling of orders, which we regret, but were unable to avoid.

The run of prices may be judged by the net cost of the standard lines. Short boots cost $3.68 in 1917, and to-day they net $3.98. Men's 4-buckle Emperors have advanced from $2.42 to $2.90, while men's self-acting are 89 cents in place of 82 cents, and women's storm slippers have advanced 5 cents and are now 63 cents. Jersey cloth goods show greater advance, men's Alaskas rising from $1.15 to $1.38 and women's from 89 cents to $1.06.

The company could not fill all its orders last year, and has appointed the amount of goods it will accept orders for from each of its customers.

THE LANCASTER TIRE & RUBBER CO. REINCORPORATES.

The Lancaster Tire & Rubber Co., notice of the incorporation of which under the laws of the State of Ohio appears elsewhere in this issue, has moved its principal offices from Lancaster, Ohio, to the new Gugle Building, Fourth and Long streets, Columbus, Ohio. Additional equipment will be installed to meet the increased demand for its product, but under the new incorporation its capital stock has been reduced from $550,000 to $300,000 common and from $300,000 to $200,000 preferred. F. A. Miller is president. The company will continue to manufacture the Lancaster Wiregrip and Fairfield Clingstone tires, under the supervision of W. H. Hermann, factory manager.

GOODYEAR ADOPTS THE TRADE ACCEPTANCE.

The Goodyear Tire & Rubber Co., Akron, Ohio, has inaugurated the use of trade acceptances, recommended by the Federal Reserve Board, in connection with a new future payment plan for the benefit of retail tire dealers, which involves a time draft drawn by the seller on the purchaser, stipulating payment on a fixed future date.

The Goodyear company believes the trade acceptance, having, as it has, Government endorsement, undoubtedly enlarges the buying capacity of a merchant, enables him to carry a larger stock with a limited amount of capital, and makes for a quicker turnover. As it applies to Goodyear business, the plan will be used in connection with spring orders for tires, tubes, accessories and repair materials, but not for other products of the compan

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

THE raw rubber market continues to go in favor of the manufacturers, and those who congratulated themselves on having covered their contemplated requirements for some time ahead at 2*s.* 6*d.* to 2*s.* 8*d.* per pound now see that they could have done better by waiting. The common remark is that there is plenty of rubber in the country, and the joint fact of continually increasing output from the plantations and the diminution in demand because of the almost total cessation of pleasure motoring in all belligerent countries, and, to a large extent, in neutral countries also, must continue to make the situation easy for the manufacturer. Large though the demands are for rubber for use in warfare, it is contended that they cannot pull the business around to the point which satisfies the producer and worries the manufacturer.

With regard to some remarks I made recently to the effect that with cheap rubber and an urgent demand for goods, the manufacturer was in a position to enhance and fortify his reputation by using better rubber than is always possible in time of keen competition, a manufacturer points out to me that while this may be the case in many lines, it does not apply to all. He cited as an example cycle capes, in the sale of which price rather than quality still remains the dominant factor if business on a large scale is to be done. Another matter of increased cash which has become somewhat acute is that of solvent naphtha, which has soared to nearly four shillings a gallon, against a normal price of about one shilling. To counteract this I am told that economy in some other direction is necessary. Reverting to raw rubber, there is a feeling in plantation investors' circles, where reduced dividends are now the order of the day, that America is getting too good a thing out of the East, now that she has practically fixed the price she will pay for rubber shipped direct. The Rubber Growers' Association has long discussed the ways and means of controlling the outputs and selling price, but nothing definite has been done hitherto. Now, it seems, it is really going to take some action, as it rankles very much with this august body that practically all other raw materials have risen in value during the war, while rubber has actually fallen. What effect this will have upon American action remains to be seen. Well-informed people on this side recognize that America has followed an accurate forecast of the future as regards the downward trend of rubber prices, and they recognize, moreover, that she is out to win the war. The tension in the cotton trade has been relieved by the promise of more tonnage, and the Cotton Control Board has suspended until further notice the order permitting only 70 per cent of the looms to be operated.

GAS BAGS.

The municipal authorities of one of the largest towns recently announced that they would require all motor vehicle gas bags to undergo a definite pressure test. It was felt that some action ought to be taken to safeguard the public, as all sorts of gas bags were being rapidly put into commission. Now the Government has stepped in and a gas traction committee has been appointed to consider and report upon (1) the employment of gas in substitution for petrol and petroleum products as a source of power in motor vehicles, with due regard to the safety of the public, and (2) the action, if any, which should be taken by the Government to encourage and safeguard the use of gas for this purpose. The committee, of which Sir Boverton Redwood, Bart., is chairman, is composed of engineers, oil experts and authorities on explosives. One would have thought that room would have been found for a rubber manufacturer, but no doubt rubber manufacturers, and possibly a rubber chemist, may be called to give evidence before the committee. Although a good deal of work has been done of late with regard to the permeation of gases through rubber films, the results for obvious reasons have been kept quiet. The coal gas of to-day has by no means the same composition as the coal gas of a few years ago, there being a general diminution in calorific power, and although the amount of gas required for a certain mileage will depend directly upon the calorific power, the effect of the gas or its diffusibility through proofing cannot be prognosticated with equal certainty. It may be that rubber proofing will have serious competition, as I have seen the results obtained with a rubber proof and a non-rubber proof, which were decidedly in favor of the latter. Moreover, the latter could be turned out at a much lower cost. Whether it would stand wear and tear and exposure to the weather is a matter, however, which has yet to be tested.

ENEMY PATENTS.

I understand that America is following the lead of England by legalizing the use of German patents in the States without the permission of the patentees. I do not suppose the rubber manufacturers in America will be much more affected than has been the case with the trade here, where, to the best of my knowledge, the only patents that have been applied for are those associated with organic accelerators. It is sought to amend our own patent law by a new bill recently presented to Parliament providing *inter alia* that the monopoly rights under a patent shall be deemed to be abused if after the expiration of four years the patented invention is not being worked within the United Kingdom on a commercial scale, and no satisfactory reason can be given for such non-working. This has now been the case for some years with regard to foreign patents, though I believe that America has not yet imposed such terms on foreign patentees.

THE OXIDATION OF RUBBER.

A paper on this subject was read at the December meeting of the Manchester section of the Society of Chemical Industry by S. J. Peachey and M. Leon. In the course of the short discussion which followed the paper, H. L. Terry remarked that Spiller had found 27 per cent of oxygen in the soft resin, against Peachey's 18. He was glad to hear that the hard insoluble resin first noticed by Burghardt in 1882 was now being thoroughly investigated. He had never been able to get it into solution. With regard to the application or the utility of the author's results in the rubber trade, he was somewhat doubtful. Moreover, it was open to question whether the manufacturers wanted their goods to do more than outlive those of their competitors, because repeat orders were an essential of the trade. Mr. Peachey in replying to this point, which was also referred to by one or two other speakers, said that he recognized that his results were not applicable to the ordinary oxidation of rubber goods by air. It was out of the question, however, to study the matter by ordinary aerial oxidation as the time required was much too long.

ACCELERATION.

In his paper on "Vulcanization of Rubber," read at the annual meeting of the Society of Chemistry at Birmingham last July, Dr. D. F. Twiss, who is head chemist of the Dunlop Rubber Co., Limited, made an interesting announcement with regard to the applicability of caustic potash and caustic soda either alone or in solution in glycerol as vulcanizer accelerators. In the subsequent discussion it was remarked by the president that the information given in this paper from the Dunlop laboratory was a rebuke to those who complain that our large rubber companies are too reactive. At least that was the gist of his remark. Noth-

ing was said in the paper as to any patent, and it is has come as a mild surprise to a good many to find that the process is protected by English patent No. 110,059, December 9, 1916, of the Dunlop Rubber Co., Limited, and D. F. Twiss. This, of course, does not detract from the merits of the discovery, though it makes it a matter of greater interest to hear the views of other chemists upon the subject. As is well known, the application of caustic alkali in the rubber trade up to now has been in connection with the desulphurization of goods, such as elastic thread and red bands, and with the alkali process of reclaiming. It is stated by Porritt in "Chemistry of Rubber" that the main defect of the alkali reclaim is that it is impossible to remove the last traces of alkali, and this is a disadvantage in the manufacture of rubber goods. I am unable to support Porritt with regard to the presence of alkali in the reclaims with which I am familiar, though I know that a good many profess to say that they will buy only acid reclaim for some of their work. Does this partiality arise from some hitherto unknown process of acceleration?

THE INDIA RUBBER, GUTTA-PERCHA & TELEGRAPH WORKS CO., LIMITED.

In 1911 this company showed a loss of £55,457 and in 1914 a loss of £18,922. After that—presumably because of the war—a recovery set in and for the year 1916-17 the profit is £162,149. The balance carried forward is £59,865, as against only £1,033 in 1914. Owing to various appropriations and to making the reserve fund up to £450,000, no increase has been made in the dividend, which is 10 per cent, the same as for the last two years.

PERSONAL MENTION.

Sidney Gedge, after a lengthy tenure of the position, has resigned the chairmanship of Henley's Telegraph Works Co., Limited, owing to advanced age, but will retain a seat on the board. It will not come as a surprise to many in the trade to hear that his successor is George Sutton, who has seen so many years' service with the company as manager and managing director. The trade in mechanical rubber, which has long formed a part of the business, has recently been extended to include the manufacture of solid band tires.

Lieutenant George Spencer, a director of George Spencer, Moulton & Co., Limited, the well-known rubber manufacturer of Melksham, has died of wounds received in action. He was the only son of Alexander Spencer.

INTERNATIONAL RUBBER EXPOSITION, LONDON, 1920.

It is reported that plans are being made to hold the fifth International Rubber and Allied Trades Exposition in 1920 in London under patronage of King George V. The president of the committee charged with the management of the exposition will be Sir Henry A. Blake, G. C. M. G., formerly governor of Ceylon, the Bahamas, Newfoundland, Jamaica and Hongkong.

Simultaneously, the second International Cotton, Fibres and Other Tropical Agricultural Products and Allied Trades Exposition will be held.

WAR CONDITIONS.

British rubber merchants, planters and others interested in the rubber trade recently cooperated under the chairmanship of Sir Edward Rosling to make a generous contribution to blinded soldiers at St. Dunstan's Hostel, when the handsome total of £10,366 14s. was realized.

GUAYULE RUBBER CO. REDUCES CAPITAL.

The seventh annual general meeting of the Guayule Rubber Co., Limited, was held at Winchester House, Old Broad street, London, E. C., A. G. Angier, presiding, when the following resolution was adopted: "That the capital of the company be reduced from £400,000, divided into 400,000 shares of £1 each, to £12,000, divided into 400,000 shares of 6*s.* each, and that such reduction be effected by canceling capital which has been lost or is unrepresented by available assets to the extent of 14*s.* a share in respect of each of the 399,943 shares of the company which have been issued and are outstanding, and by reducing the nominal amount of all the shares in the company from £1 to 6*s.* each."

It was also voted: "That on such reduction taking effect, each of the 399,943 shares of the company which have been issued and are outstanding be subdivided into three fully-paid shares of 2*s.* each, and each of the 57 shares which have been forfeited and not reissued be subdivided into three shares of 2*s.* each upon which nothing has been paid, to the intent that the capital of the company may consist of 1,200,000 shares of 2*s.* each."

THE SITUATION IN MALAYA.

By Our Regular Correspondent.

AT a recent session of the Federal Council at Kuala Lumpur R. C. M. Kindersley, chairman of the Planters' Association of Malaya, brought up the unfairness of the rubber export duty, which was explained in THE INDIA RUBBER WORLD a few months ago, and pointed out that circumstances had changed since 1914, when it was agreed that the London price should be taken as the basis for calculation. London was then the principal market for Malayan rubber and the Singapore market barely existed, but now the position was reversed. Although on several occasions Singapore prices had exceeded London prices, the 1914 arrangement had been adhered to. Moreover, charges to London had increased to 4.33*d.*, whereas it was understood that the government deducted only 3*d.* per pound as formerly. While the Government holds that the whole agreement should be canceled if one provision were modified, the High Commissioner expressed his willingness to reopen the question, a circumstance that is believed to offer the hope of a satisfactory solution of this problem.

ONCE MORE, "THE AMERICAN INVASION."

From time to time the much-discussed question of American rubber growers in Malaya crops up again in the pages of the local rubber journals. Thus the December 1, 1917, issue of "Grenier's Rubber News" contains two letters on the subject, which are interesting for the widely divergent views expressed. The first letter is by a Britisher who, having lived in America over twelve years, finds that Americans hold (1) that their standard of living is higher than any other; (2) that on account of this high standard of living they cannot be expected to compete with foreigners and must be protected. As a result, should Americans come to Malaya in sufficient numbers to make themselves felt they would raise the scale of wages and in order to keep up competition, American buyers would combine and give the produce of their countrymen the preference.

This correspondent also points out that as no foreigners can lease rubber land in the Philippines, Americans should not object if others adopt this stand towards them, and ends by declaring that Americans should be given every facility to buy cheaply, but should leave the business of growing rubber to the British.

The second letter is by an American. He considers that in the first place Britain should not, in the interest of her colonies, restrict shipments in neutral or non-British bottoms, and pictures British feelings if the United States adopted a similar policy with regard to cotton.

The reason for this curtailment and that in connection with the acquisition of land in Malaya, says he, is the fear of an American monopoly of rubber. This shortsighted action has driven American investment to Sumatra and Java, a circumstance that the Malayan Government should heed, as the money invested in the Dutch East Indies might have been employed to improve waste land in the Federated Malay States.

A third opinion on the same question is expressed in the editorial columns of "The Malayan Tin and Rubber Journal," where it is pointed out that "there are still nine million acres and more available for rubber planting in this peninsula, and that

there will still be plenty of land left for Britons after the war even if we allow the present American inquirers to take up a hundred thousand acres. One advantage of allowing Americans to come in now is that we shall get the benefit of the researches of their staff of scientists, who are the best that money can obtain. And we certainly need as much scientific advice as we can get, in view of the grave menace of disease."

JAPANESE AS ESTATE LABORERS.

The manager of a certain estate in the Federated Malay States relates a typical experience with Japanese laborers. It appears that a sufficient number of Tamil coolies for the estate could not be secured as it was not a healthy one. As a last recourse, coolies were procured from Japan. Although they wanted all kinds of extras and thus were expensive, they worked splendidly and were so keen to learn and amenable to discipline that the management was delighted. But this condition did not last; after the men had learned all there was to be found out about European methods of rubber growing every one of them left and started his own estate in Johore.

This instance is typical of Japanese ambition and capabilities, and at the same time shows that European planters cannot hope to fill their ranks with Japanese laborers.

INCREASED AMERICAN SHIPPING AT SINGAPORE.

The scarcity of British shipping and high freight rates have greatly increased the American shipping at Singapore. During the three years 1912, 1913 and 1914 only one American vessel of 724 tons entered at Singapore, that entry being in 1913. In 1915, however, 17 American ships entered, of an aggregate net tonnage of 39,956; in 1916, 20 ships entered, with a total net tonnage of 43,500; while in the period from January to October, 1917, 19 vessels entered, of a total tonnage of 38,421. Crude rubber and tin cargoes for direct shipment to the United States have been very attractive to shipping agents, because of their great value in proportion to bulk and consequent maximum freight rates. Approximately 38,370 long tons of rubber were exported to the United States during the first seven months of 1917 at rates ranging from $70 to $95 gold per ton. Two American steamship companies are now maintaining monthly service between Singapore and the Pacific Coast of the United States.

NOTES FROM THE NETHERLANDS EAST INDIES.

By Our Regular Correspondent.

IT is a cheering fact that, despite the serious shipping difficulties with which Java has had to contend during the past year, exports of rubber continue to increase. This is especially noticeable in the shipments to America from Javanese ports to San Francisco which have more than doubled.

This direct American trade has developed quite recently, for, until 1913, no ship under the Dutch flag was seen in an American Pacific port. But the participation of the Netherlands and her colonies at the Panama-Pacific Exposition of 1915 drew the attention of the United States to the wonderful resources of the Dutch East Indies and gave an impetus to trade that was greatly augmented by the world war. Consequently, no fewer than 18 vessels, totaling over 200,000 tons, and carrying tropical products of which rubber formed no inconsiderable part, entered at San Francisco in 1916. The total tonnage of Dutch ships clearing this port in 1917 is estimated to have exceeded 500,000 tons.

Naturally, the transferring of so great a portion of trade to Batavia and Medan is not relished by Amsterdam and Rotterdam, which are forced, for the duration of the war, at least, to take a back seat. Thus the Amsterdam rubber journal, "Primrose," has expressed its feelings in repeated articles against the Batavia rubber market, in an endeavor to show in what an unbusinesslike manner things are managed here and to prove that Batavia is not the best market for producers, of whom, it declares, a great number, besides the majority of Dutch companies, would under no circumstances favor the local market.

Although it is true that in certain minor respects the rubber planter neglects to consider the buyer, the responsible committees are doing their best to remedy these defects; but, in any case, it is superfluous to state that as long as foreign buyers consider it more advantageous to buy directly at Batavia—and there seems to be no reason why either they or the producers should prefer to deal through the roundabout medium of an expensive Amsterdam or Rotterdam broker—this market will continue to flourish, even after the war.

ASSOCIATION OF AGRICULTURE AND INDUSTRY, RIOUW.

This association has recently been formed at Riouw, Sumatra, and counts among its members such well-known rubber companies as Galang Besar Rubber & Produce Co., Limited, Pulau Bulang Rubber & Produce Co., Limited, The Indragiri & Guttapercha Co., Limited, and the United Malaysian Rubber Co., Limited.

THE EFFECT OF LIGHT IN HEALING TREE WOUNDS.

J. R. Harmsen has made experiments with four-year-old trees of equal dimensions to prove the influence of light in regard to the healing of wounds. From each tree a strip of bark and cambium, measuring 1 by 5 centimeters, was cut at a height of 1.5 meters and the wound covered, excepting a small opening at the bottom, with pieces of blue, green, yellow, red and colorless glass. The best results were obtained with the blue and colorless glass; yellow glass gave the worst results. It furthermore appeared that exposed wounds, from which the scraps had been removed, healed more slowly than those in which scraps had been left, while these again closed less rapidly than wounds under colorless glass, thus indicating that covered wounds closed sooner than uncovered. All wounds under yellow glass, however, became moldy.

FIRE DESTROYS 5,500 POUNDS OF RUBBER.

Recently the drying shed on Pangindangan, the estate of the Netherlands Gutta Percha Co., caught fire, and the entire structure, containing some 5,500 pounds of dry rubber was destroyed.

LATEXOMETERS IN PRACTICAL USE.

Experiments were recently undertaken at the Experiment Station of the A. V. R. O. S. to settle the value of latexometers in experiments made under estate conditions to determine the yield of dry rubber from test plots.

Authorities in Malaya are of the opinion that the instrument is of practical value, while Ultee, Gorter, Kerbosch and Bodde, of the Dutch East Indies, have pointed out that it often gives such inaccurate figures as to the rubber contents of latex that it may be termed useless for the purpose mentioned.

However, the four series of experiments conducted showed that under certain circumstances the figures obtained by the latexometer or metrolac are reliable. The tests were carried out on different estates by various persons, during 12, 26, 14 and 26 days, relating to 12, 10, 7 and 10 plots, diluted and undiluted latex being used. The yield of rubber from each plot was determined in two ways:

1. The latex gathered in each plot was measured and the specific gravity found with Griffin's Latexometer (or the R. G. A. Metrolac), from which the yield of rubber was calculated.
2. A 50 or 100-c.c. sample of latex from each plot was coagulated and measured when dry.

The figures thus obtained differed considerably, but when the plot with the highest yield was based on 100, and the ratio of the yields from the other plots calculated from this, these relative figures for the two methods compared very favorably. The differences may be partly due to errors in the weight of the dry samples, as a second weighing showed some variation also.

Measurements taken with the latexometer and the metrolac showed errors in the actual figures, and these differences can be

explained by errors in the scale and by the influence of temperature on the readings. It was found that the worst errors occurred on rainy days. Also, as the temperature rose, a higher rubber content was registered—in the case of the metrolac, 0.35 per cent higher per degree, and for the latexometer, 0.43 per cent per degree. Again the relative figures remained the same.

PAPAW SAP AS A COAGULANT.

Experiments have been made by Dr. Ultée to determine the value of a new coagulant for *Hevea* latex, namely, papaine.

A watery solution of this preparation proved to act twice as powerfully as acetic acid of the same concentration. Rubber prepared with papaine has normal tensile strength and period of vulcanization, but it has the disadvantage that it dries with surprising slowness, and that smoked sheet worked in the usual way can under no circumstance be dried internally.

Papaine is the dried milk sap of the unripe fruit of the papaw tree. This tree is a native of Central America and the West Indies, but has been introduced into most tropical countries. It grows rapidly and bears fruit at the age of 10 or 12 months until five or six years old, when its fruitful life is practically over. The fruit, when ripe, forms a favorite dessert; when unripe it is pickled or boiled and used as a vegetable. The milky juice, or papaine, acts like rennet and is sometimes used as a substitute for pepsin in medicine.

THE BALATA INDUSTRY IN SURINAM.

Exports of balata from Surinam during the first six months of 1917 decreased by almost 450,000 pounds from the amount for the corresponding period of 1916, the comparative figures being 4,722,740 pounds and 5,166,480 pounds, respectively.

Last year, six applications for concessions in balata forests, covering an area of approximately 1,000,000 hectares (hectare = 2.457 acres), came in and a total of fl. 45,000 was paid in concession money.

THE SITUATION IN BRAZIL.

By Our Regular Correspondent.

THE steady depreciation in the price of Brazilian rubber is causing no small amount of anxiety here. For some time past, minor articles of warning and exhortations have been appearing in the northern newspapers, but now "A Folha do Norte" has taken up the cause of Para rubber in good earnest.

Reviewing conditions past and present, it points out that Brazil's unenviable position in the rubber market to-day is chiefly due to the fact that the nation was given over to absolute indifference of consequences. Not only did Brazil allow England to take *Hevea* seed to plant in Ceylon and other British Asiatic colonies, but having done so, was perfectly satisfied to sit with crossed arms through the long years during which British capital built up the industry that to-day is so formidable a rival of the Brazilian rubber trade.

In concert with indifference, the higher salaries obtained here, the exorbitant freight rates, the heavy taxes and speculation have all worked to bring about the present condition. Government subsidies could aid in reducing freight charges, while taxes might be lightened. Speculation is made possible by the lack of capital in Para and shortage of shipping facilities which caused an accumulation of stocks, circumstances by which schemers have benefited to the detriment of the country.

Hyppolito de Vasconcellas, acting consul general at London, says in his report for the last quarter of 1916 that prices for Para rubber remain firm in London and Liverpool solely because this article is indispensable in the manufacture of certain goods. He emphasizes the surprising lack of organization and cooperation obtaining among merchants, producers and laborers in Brazil. His final word contains a ray of comfort, however. According to him the *Hevea* tree, native of South America, does not adapt itself entirely to Ceylon and other countries in the Eastern tropics. The tree degenerates, produces latex that is inferior in quantity and quality when compared with the yield in Brazil, and gives only a small number of healthy seeds. It will, therefore, not be long before it will be necessary for the East to turn to Brazil for fresh supplies of seed, which should not be granted.

Among the remedies suggested is one coming from the Associacão Commercial, namely the "Carteira de exportacão," a governmental department to be established to cooperate with the Banco do Brazil solely in order to support and encourage the rubber trade by taking over the selling, buying and exportation of rubber at such times when the price of rubber drops to a certain fixed minimum.

That the local government realizes the seriousness of the situation is evidenced by the fact that the Governor of Para, Dr. Lauro Sodré, has addressed President Braz of Brazil for aid. President Braz has replied to the effect that measures will be taken in this respect with the cooperation of the Minister of Finance and the president of the Banco do Brazil. As a first step, separate statements of the stocks of rubber in the ports of Manaos and Para have been required.

TRADE IN 1916.

In view of the fact that a statement has been made to the effect that the United States will in time follow Britain's lead and limit imports of Para rubber it is interesting to note that this country continues to take the largest amount of rubber from Brazil. The comparative figures for the years 1915-16 follow:

Crude Rubber:	1915.		1916.	
To—	Tons.	Value.	Tons.	Value.
United States	20,776	$19,229,297	19,965	$22,537,668
Great Britain	12,682	13,389,874	10,379	12,910,741
France	962	693,310	646	594,741

Not only is the United States the chief consumer of Brazil's crude rubber but her exports of manufactured rubber to the latter country also head the list as is here shown.

Rubber manufactures, n. e. s.:	1915.	1916.
From—		
United States	$71,380	$270,237
Germany	3,436	322
Great Britain	67,227	88,405
France	57,991	102,590
Rubber in sheets:		
From—		
United States	$7,409	$5,991
Great Britain	4,896	9,693
Automobile tires and tubes:		
From—		
United States	$226,115	$427,821
France	50,243	56,350
Great Britain	102,585	75,628
Italy	186,042	198,680
Solid tires for motor trucks:		
From—		
United States	$12,689	$70,228
France	3,497	4,883
Great Britain	14,296	46,157
Rubber toys:		
From—		
United States	$271	$8,449
France	1,227	6,408
Great Britain	2,340	6,692
Rubber in tubes:		
From—		
United States	$36,691	$66,344
Great Britain	261,966	14,667

JAPAN AND BRAZIL.

It appears that the Japanese Government has formulated a scheme to aid emigration to Brazil by the amalgamation of four concerns into one company with a capital of 10,000,000 yen (about $4,900,000). This enlarged company will also engage in various agricultural enterprises in South America, and rubber, coffee, hemp and sugar plantations are to be purchased. It is further stated that the Japanese Government will lend the company 1,000,000 yen annually at a low rate of interest.

ROBERT ALLAN ENLISTS.

Robert Allan, formerly manager of the London and Brazilian Bank at Para, has enlisted and is now known as No. 17093, C. K. Scots Guards, stationed at Caterham, Surrey, England.

Recent Patents Relating to Rubber.

THE UNITED STATES.

ISSUED DECEMBER 4, 1917.

NO. 1,248,436. Hosiery supporter. W. Bach, Webster Groves, Mo.

1,248,445. Insulated track tool D. L. Braine, assignor to C. E. Braine—Both of New York City.

1,248,570. Corset having elastic strap sections. B. L. Starr, New Ulm, Minn.

1,248,636. Wheel rim and tire structure. J. C. Eakens, Mingo Junction, assignor of one-half to E. C. Brandfass, Steubenville—both in Ohio.

1,248,667. Track torpedo having a resilient body. H. W. Kelly, Trenton, assignor of one-half to A. Love, Ridgwood—both in N. J.

1,248,668. Track torpedo having a resilient body. H. W. Kelly, Trenton, assignor to A. Love, Ridgewood—both in N. J.

1,248,669. Track torpedo comprising a premolded shell of rubber-containing material. H. W. Kelly, Trenton, assignor of one-half to A. Love, Ridgewood—both in N. J.

1,248,670. Track torpedo comprising a hollow shell of rubber-containing material. H. W. Kelly, Trenton, assignor of one-half to A. Love, Ridgewood—both in N. J.

1,248,713. Method of forming tire casings. S. C. Rand, Chicago, Ill.

1,248,804. Soft rubber button for hosiery supporter. D. G. Butta, assignor to Ivory Garter Co.—both of New Orleans, La.

1,248,860. Shoulder brace. A. Hodges, Sands Point, N. Y.

1,248,863. Cushion tire. W. E. H. Humphrys, Hendon, England.

1,248,887. Demountable rim. O. W. Mott, assignor of one-half to Jackson Rim Co.—both of Jackson, and one-half to Detroit Demountable Rim Co. Detroit—both in Michigan.

1,248,891. Nasal douche. H. B. Nichols, New York City.

1,248,961. Chewing gum. H. M. Weber, East Orange, N. J., assignor to Ellis-Foster Co., a corporation of New Jersey.

1,248,997. Engine or machine packing. G. W. Beldam, Ealing, England.

1,249,000. Shoe sole impervious to moisture. M. E. Benjamin, Washington, D. C.

1,249,014. Valve for pneumatic tires. A. Brenner, Chicago, Ill.

1,249,018. Demountable rim for automobile tires. T. Bryant, Santa Monica, Cal.

1,249,134. Teat cup for milking machines. M. Leitch, Poughkeepsie, N. Y., assignor to The De Laval Separator Co., a corporation of New Jersey.

1,249,211. Elastic corset attachment. S. Schaefer, Brooklyn, N. Y.

1,249,284. Tire. J. Seadler, Sacramento, Cal.

1,249,292. Tread and process of manufacture. L. F. Montgomery, Fort Recovery, assignor of one-half to J. E. Grosjean, Lima—both in Ohio.

ISSUED DECEMBER 11, 1917.

1,249,375. Douche nozzle. C. E. Gervais, assignor to F. E. Waymer—both of Jacksonville, Fla.

1,249,380. Coupling for spirally wound metal covered rubber hose. H. W. Goodall, Aldan and W. S. Feeny, Philadelphia—both in Pa.

1,249,452. Demountable rim. W. J. P. Moore, New York City.

1,249,901. Self-filling fountain pen. F. Riesenberg, assignor to M. C. Riesenberg—both of New York City.

1,249,517. Tire structure. A. Schreiber, Beloit, Kan.

1,249,572. Centrifugal pump. W. W. Weitling, College Point, N. Y., assignor to American Hard Rubber Co., New York City.

1,249,591. Tire valve. O. F. R. Bromberg, San Diego, Cal.

1,249,623. Shoe for automobile tires. J. H. Hefferman, Albany, N. Y.

1,249,639. Rubber boot or shoe. T. E. La Fayette, assignor to Hood Rubber Co.—both of Watertown, Mass.

1,249,695. Resilient tire. R. V. Wagner, assignor to The Wagner Tyre Co., Limited—both of London, England.

1,249,702. Sole for boots and shoes. W. B. Wiegand and T. H. Rieder—both of Montreal, Canada, assignors to The Goodyear Metallic Rubber Shoe Co., a corporation of Connecticut.

1,249,727. Tire. H. J. Doughty, Providence, R. I., assignor to The Doughty Tire Co., Portland, Maine.

1,249,754. Garter. J. C. Hitchner, G. A. Rumpf and G. M. Brown, assignors to The H. and R. Garter Co., Inc.—all of Philadelphia, Pa.

1,249,922. Wheel rim. F. A. Doyle, Chicago, Ill.

1,249,979. Sectional demountable rim. J. L. Maguire, assignor of one-fourth to S. B. Haffner—both of Elkins, W. Va.

1,249,989. Eraser. H. M. Montgomery, Cedar Vale, Kan.

1,250,100. Sub-casing or inner tire protector for pneumatic tires. J. N. Davis, Denver, Colo.

ISSUED DECEMBER 18, 1917.

1,250,180. Tire tool for automobiles. H. C. Hughes, Cincinnati, Ohio.

1,250,223. Inner tube for elastic vehicle tires. E. W. Rawdon, Akron, Ohio.

1,250,309. Demountable rim. C. C. Harbridge, assignor of one-half to Detroit Demountable Rim Co.—both of Detroit, and one-half to Jackson Rim Co., Jackson—both in Michigan.

1,250,405. Resilient tire. J. S. Williams, Riverton, N. J.

1,250,503. Relief valve for tires. W. F. Ray, Chicago, Ill.

1,250,510. Tire. W. J. Robinson, Denver, Colo.

1,250,622. Flexible covering. J. H. Munro, Pen Argyl, Pa.

1,250,633. Resilient tire fastening. E. J. Oetter, Denver, Colo.

1,250,658. Nursing bottle stopper. F. S. Richards, Warren, Pa.

1,250,767. Brush comprising a hollow back member having rubber-covered sides. A. C. Bass, Laporte, Ind.

1,250,781. Tire tread. J. Blair, Jr., Rock Springs, Wyo.

1,250,831. Means for removably securing demountable wheel rims. A. D. Fisher and T. S. Scott—both of Winchester, Ky.

1,250,909. Demountable vehicle wheel rim. W. T. Lowrey, Jr., Blue Mountain, Miss.

1,250,911. Life preserver. D. D. Lyons, Farmington, Minn.

1,250,920. Vehicle tire and process of making. L. G. Marks, Perry, Iowa.

ISSUED DECEMBER 25, 1917.

1,251,007. Attachment for overshoes. W. B. Frye, Buffalo, N. Y.

1,251,014. Tire protector. R. C. Greenerd, Winthrop, assignor of one-half to J. W. Schaeffer, Boston—both in Mass.

1,251,017. Tire. W. H. Hann, Munden, Va.

1,251,036. Wind shield squeegee. F. H. Ilse, Detroit, Mich.

1,251,077. Airless tire for automobiles. E. P. Mayhew, San Diego, Cal.

1,251,086. Hose connection for air or water. H. E. Morgan, Newton, assignor to J. R. Quilty, Abbotsford—both in New South Wales.

1,251,277. Emergency tire. J. G. Poe, assignor of one-half to A. B. Small—both of Dallas, Tex.

1,251,394. Swimming harness. R. W. Lyon, Traverse City, Mich., assignor to Kantsink Swimming Harness Co.

1,251,404. Hand bag or container for bathing suits. W. W. Mills, Chicago, Ill.

1,251,421. Fountain pen filler. F. Riesenberg, assignor to M. C. Riesenberg—both of New York City.

1,251,444. Tire armor or reinforcement. C. L. Teevan, Brooklyn, N. Y.

THE DOMINION OF CANADA.

ISSUED DECEMBER 30, 1917.

179,103. Gage for tire pressure. J. J. Weinandt, Ayr, North Dakota, U. S. A.

179,231. Rubber heel. W. M. Scholl, Chicago, Ill., U. S. A.

179,299. Golf ball. G. C. Worthington and W. E. Reichard—both of Elyria, Ohio, U. S. A.

179,343. Baby comforter. A. R. Tufts, Vancouver, British Columbia, Canada.

179,363. Tire valve. A. Schraeder's Son, Inc., New York, N. Y., assignee of E. V. A. Myers, East Orange, N. J.—both in U. S. A.

179,371. Tire protector. C. H. Light, Des Moines, and E. Sparling, Garden Grove, assignee of a half interest—both in Iowa, U. S. A.

179,395. Rim tool. F. A. Berry, London, Tenn., U. S. A.

179,409. Detachable rubber heel. G. S. Gilbert, Toronto, Canada.

179,422. Foot protector for horses. G. A. Hooey, Otter Lake, Parry Sound, Ontario, Canada.

179,467. Demountable rim tool. O. A. Wood, Blissfield, Mich., U. S. A.

179,501. Tire. E. Pascal, assignor, B. Leves and M. L. Rosenthal, each an assignee of a third interest—all of Montreal, Quebec, Canada.

THE UNITED KINGDOM.

ISSUED NOVEMBER 28, 1917.

110,026. Hose couplings. H. Hendoll and Albany Engineering Co.—both of 80 Ossory Road, London.

110,033. Medical syringes and like appliances. T. A. De Vilbiss and De Vilbiss Manufacturing Co.—both of 1302 Dorr street, Toledo, Ohio, U. S. A.

110,047. Revoluble rubber pad for the heel of an overshoe. H. Atkinson, Southbourne, Wake Green Road, Moseley, Birmingham.

110,075. Rubber sleeve and disc for phonographic sound box. A. Lewis, 23 Sedgwick Road, Leyton, Essex.

110,082. Bottle holder and stopper of rubber. A. Howell, 18 Imperial Square, Cheltenham, Gloucestershire.

ISSUED DECEMBER 5, 1917.

110,270. Reservoir pens. W. Livsey, 11 Groveland Road, Wallasey, Cheshire.

110,278. Bottle stopper or lid having a removable rubber-lined sleeve. G. T. Clipstone, 58 Burlington street, Oxford Road, Manchester.

110,288. Vehicle wheel having rubber parts. W. Brown, Broadway, Peterborough, Northamptonshire.

110,310. Wheel tire. T. A. Sprague, P. O. Box 1374, Pittsburgh, Pa., U. S. A.

110,313. Wheel tire rim. F. Kühne, 34 Glacisstrasse, Dresden, Saxony, Germany.

ISSUED DECEMBER 12, 1917.

110,335. Boot uppers made from the canvas of used automobile tire covers or other waste rubber matters. A. H. Greenwood, 40 Angel street, Sheffield.

110,341. Wooden sole protected by pieces of rubber. J. Mathis, Streulistrasse, Zurich, Switzerland.

Chemical Patents will be found on pages 286-288. Machinery and Process Patents on pages 290-291.

110,417. Hoof pad. F. Whipp, 5 New Thomas street, Pendleton, Manchester.

110,511. Stocking suspender grips. H. J. Stuart, 69 Seymour avenue, Derby, Conn., U. S. A.

NEW ZEALAND.

ISSUED OCTOBER 18, 1917.

37,929. Teat cup. J. Keith, Wairanga, Auckland, N. Z.

38,110. Teat cup. W. K. Elder, Auckland, N. Z.

THE FRENCH REPUBLIC.

PATENTS ISSUED (WITH DATES OF APPLICATION).

484,335 (January 26, 1917). Improvements in rims for pneumatic tires. Th. Sloper.

484,389 (February 3, 1917). Improvements in men's belts. Société du Caoutchouc Manufacturé.

484,401 (February 5, 1917). Protection for vehicle tires. J. Kappeler.

484,407 (February 6, 1917). Vehicle wheel of elastic compound with pneumatic tire. G. S. Gallacher.

484,431 (February 9, 1917). Anti-skid device for automobiles and other vehicles. H. Thorne.

484,495 (February 17, 1917). Improvements in pneumatic tires. H. B. Wallace.

484,513 (February 19, 1917). Improvements in inner tubes. T. M. Davies and W. Davies.

484,536 (October 16, 1916). New process for coagulating *Hevea* latex. A. A. Magen.

484,538 (December 12, 1916). Elastic hub. C. F. Renard.

484,565 (February 22, 1917). Improvements in skates for sledges. Conces, Jr., and Conces, Sr.

484,575 (February 23, 1917). Improvements in elastic hubs. A. Closz.

484,576 (February 23, 1917). Improvements in elastic vehicle-wheels.. C. Dominicus.

TRADE-MARKS.

THE UNITED STATES.

92,804. Representation of head and shoulders of a nurse in cap and uniform—hot water bottles, fountain syringes, and combination syringes. The De Pree Chemical Co., Holland, Mich., and Chicago, Ill.

103,371. The word TIRETITE—a liquid preparation for closing holes in pneumatic tires. Le Roy M. Sutton, Dubois, Pa.

104,694. The word FISCO—fabric and rubber belting, hose and packing. The Fisher Governor Co., Marshalltown, Iowa.

104,849. The words RED STRIP—belting of rubber and fabric. The Gutta Percha & Rubber Manufacturing Co., New York City.

105,149. Representation within a diamond of an arm and hand in the act of striking with a mallet—belting and hose of rubber and fabric. The Gutta Percha & Rubber Manufacturing Co., New York City.

105,454. The word SEALON—bathing caps. I. B. Kleinert Rubber Co., New York City.

105,709. The word TEXEND—suspenders and suspender-ends. Everlastik, Inc., Boston, Mass.

105,902. The word LOCKTITE in graduated letters—inner tube and casing patches for vehicle tires. Locktite Patch Company, Detroit, Mich.

106,125. The word DOLPHIN forming a convex half-circle—insulated wire. Atlantic Insulated Wire & Cable Co., Jersey City, N. J.

106,126. Representation of the silhouette of a conventionalized life-preserver bearing the words DOLPHIN and ATLANTIC on the upper and lower halves in the form of a half-circle; in the center the representation of a dolphin. Atlantic Insulated Wire & Cable Co., Jersey City, N. J.

106,163. The word RESILIA—suspenders, garters, belts for supporting wearing apparel, hose-supporters and armbands. The Resilia Co., Boston, Mass.

106,196. The words CREW LEVICK in white letters within an elongated black diamond—tire sealing compounds. Crew Levick Co., Philadelphia, Pa.

106,342. The words HUB GORE A, with a heart—shoe elastic. Everlastik, Inc., Boston, Mass.

106,356. The words ROAD KING—tires composed of rubber and fabric. Ajax Rubber Co., Inc., Millbrook, New York.

106,408. The words LONE STAR with a double outlined star between the words—automobile tubes. Houston Motor Car Co., Houston, Texas.

106,586. The words SHOCK ABSORBER within an oblong rectangle, a fancy line from the letter R curving under the words—shoes of leather, rubber, fiber, felt, or other fabric construction. T. G. Plant Co., Boston, Mass.

106,601. Representation of a combined maltese cross and square, with double outline—rubber goods as follows: mats, matting, printers' blankets and coverings for cylinders or rolls, such as used in various industries, for instance on typewriters, wringing machines or printing presses and the like. The Gutta Percha & Rubber Manufacturing Co., New York City.

106,634. The word MILITARY—fountain pens. Mabie, Todd & Co., New York City.

106,846. The word KO-REC-TOE—boots and shoes of leather, canvas and rubber or a combination of such materials. The L. D. Stickles Shoe Co., Red Wing, Minn.

107,116. A conventional design having a double circle in the center connected by concave curved lines to a horizontal base line having the letter T on each side of the circle and the letter H twice repeated within—nipples or teats such as used in connection with milk bottles and nursing bottles for infants. E. Monnier, Boston, Mass.

107,117. The letter H—nipples or teats such as used in connection with milk bottles and nursing bottles for infants. E. Monnier, Boston, Mass.

107,118. The number 225—nipples or teats such as used in connection with milk bottles and nursing bottles for infants. E. Monnier, Boston, Mass.

107,119. A conventional design having a double circle in the center connected by concave curved lines to a horizontal base line having the letter T on each side of the circle and the letters B and T within—nipples or teats such as used in connection with milk bottles and nursing bottles for infants. E. Monnier, Boston, Mass.

THE DOMINION OF CANADA.

22,876. The words JUICY FRUIT on an elongated maltese cross—chewing gum. Wm. Wrigley, Jr., Co., Ltd., Toronto, Canada.

22,896. The word BUDDY, with the letters UDDY inside the letter B—boots and shoes made partly or wholly of rubber. The Beacon Falls Rubber Shoe Co., Beacon Falls, New Haven, Conn., U. S. A.

22,929. The words CLOVER LEAF and representation of a piece of clover—tires and rubber goods. Oak Tire & Rubber Co., Ltd., Toronto, Ont.

NEW ZEALAND.

13,888. The word THERMOID in fancy letters, the first and last being connected by a curved line forming the cross on the T—brake linings, brake lining disks and blocks, clutch linings, clutch disks, machine belts, rubber bumpers, tire casings, tire inner tubes, tire reliners, rubber tubing, rubber washers, rubber valve balls, rubber plunger rings, pump valves, siphon washers, bevelled washers, reducing spud washers, gage glass washers, wind shield channel rubbers and cushion strips, rubber mallets, perforated rubber mats, rubber automobile-pedal pads, and like goods included in this class. Thermoid Rubber Co., Whitehead's Road, Hamilton Township, Mercer County, New Jersey, U. S. A.

13,893. A square containing the word IMPERIAL across the top and below it a representation of a seal with the same word repeated under it with the word BRITISH MADE added—rubber hose. The North British Rubber Company, Limited, Castle Mills, Fountainbridge, Edinburgh, Scotland.

13,914. Representation of a winged sandaled foot—carpets, floorcloth and oilcloth. The Goodyear Tyre & Rubber Co. of New Zealand, Ltd., Mercer street, Wellington, New Zealand.

13,922. The word GOODYEAR divided in half by a winged sandaled foot—instruments, apparatus and contrivances not medicated for surgical or curative purposes, or in relation to the health of men and animals. The Goodyear Tyre & Rubber Co. of New Zealand, Ltd., Mercer street, Wellington, New Zealand.

13,927. A winged sandaled foot—all india rubber or gutta-percha sporting articles or games. The Goodyear Tyre & Rubber Company of New Zealand, Ltd., Mercer street, Wellington, New Zealand.

14,102. The word COLO—rubber tires and tubes. The Colonial Rubber Co., Ltd., 7 Barrack street, Sydney, New South Wales, in the Commonwealth of Australia.

THE FRENCH REPUBLIC.

169,736. The words MIMOSÉES DE THÉOULE—rubber goods. Léon Montier, 38 rue de l'Université, Paris.

169,737. The words LA MIMOSEROIE—rubber goods. Léon Montier, 38 rue de l'Université, Paris.

169,754. A cock standing above a balloon on which this same representation occurs in miniature; above the whole are the words LE VICTORIEUX, while on either side are the letters H and A, respectively—toy balloons. Mlle. Marguerite-Jeanne-Henriette Abrioux, 21 rue de Paradis, Paris.

169,757. Immediately above a representation of a pair of wings separated by a star, occur the initials R. G. S., having on either side the words GARANTI and IMPERMÉABLE, respectively; the words TRADE MARK are inscribed on the lower portion—waterproof clothing, accessories, all hygienic articles. Société Anonyme des Tissus Confectionnés, 16 rue des Colonnes du Trône, Paris.

169,766. A shield bearing a large letter Z, above and below which are the words WATERPROOF and PARIS, while on either side are the words THE and BEST—waterproof clothing. Barbazan et Rabanet, 148-150 rue Montmartre, Paris.

169,785. The word ARYS—rubber goods. Lucien Graux, 33 avenue Kléber, Paris.

169,791. The hyphenated word TROU-TROU—corsets, brassieres and accessories. Emile Savoye-Deglaire, 124 rue Réaumur, Paris.

169,798. The words LA MONDAINE—garters for corsets. Etablissements Farcy et Oppenheim, 13 rue des Petits Hotels, Paris.

169,991. The word JUDEX—rubber soles and heels. Charles Kessler, 40 rue Dauphine, Paris.

170,133. The word GUINÉE—corsets, brassieres, belts, etc. Société G. Bos et L. Puel, 234 faubourg Saint Martin, Paris.

170,134. The word BEST—stockings, belts, and all other articles of elastic fabric. Société G. Bos et L. Puel, 234 faubourg Saint Martin, Paris.

170,135. The word CURATOR—stockings, belts, and all other articles of elastic fabric. Société G. Bos et L. Puel, 234 faubourg Saint Martin, Paris.

170,136. The word FLEX—stockings, belts, and all other articles of elastic fabric. Société G. Bos et L. Puel, 234 faubourg Saint Martin, Paris.

170,137. The word INUSIC—stockings, belts, and all other articles of elastic fabric. Société G. Bos et L. Puel, 234 faubourg Saint Martin, Paris.

170,138. The word LUX—stockings, belts, and all other articles of elastic fabric. Société G. Bos et L. Puel, 234 faubourg Saint Martin, Paris.

170,139. The word NERVOR—stockings, belts, and all other articles of elastic fabric. Société G. Bos et L. Puel, 234 faubourg Saint Martin, Paris.

170,140. The word FEARLESS—stockings, belts, and all other articles of elastic fabric. Société G. Bos et L. Puel, 234 faubourg Saint Martin, Paris.

170,141. The word ROBUR—stockings, belts, and all other articles of elastic fabric. Société G. Bos et L. Puel, 234 faubourg Saint Martin, Paris.

170,142. The word SALUTAR—stockings, belts, and all other articles of elastic fabric. Société G. Bos et L. Puel, 234 faubourg Saint Martin, Paris.

170,143. The word TRIPLEX—stockings, belts, and all other articles of elastic fabric. Société G. Bos et L. Puel, 234 faubourg Saint Martin, Paris.

170,144. The word UNIC—stockings, belts, and all other articles of elastic fabric. Société G. Bos et L. Puel, 234 faubourg Saint Martin, Paris.

170,145. The word USEFUL—stockings, belts, and all other articles of elastic fabric. Société G. Bos et L. Puel, 234 faubourg Saint Martin, Paris.

170,195. The words LA VULCANISÉE—solutions of vulcanized rubber and all products of vulcanized rubber. Société La Vulcanization Nouvelle, 75 rue de Paris, Clichy.

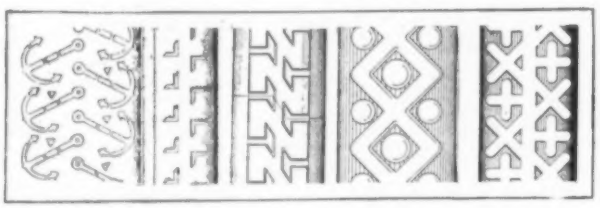
DESIGNS FOR TIRES.

THE UNITED STATES.

51,544. Tire tread. Term 3½ years. Patented Oct. 16, 1917. P. D. Beck, Lawrence, Kan.

51,546. Tire tread. Term 14 years. Patented Oct. 15, 1917. W. B. Buckley, Overbrook, Pa.

51,555 Tire tread. Term 14 years. Patented Oct. 2, 1917. Jules Hauvette-Michelin, New Brunswick, assignor to Michelin Tire Co., Milltown—both in New Jersey.



51,544 51,546 51,555 51,616 51,580

51,616. Elastic vehicle tire. Term 3½ years. Patented Oct. 14, 1916. R. P. Sullivan, Pittsburgh, Pa., assignor to the Giant Tire & Rubber Co., Akron, Ohio.

51,580. Tire casing. Term 3½ years. Patented Nov. 27, 1916. A. Breitenstein, Akron, assignor to The Mutual Motor Stores Co., Cleveland—both in Ohio.

DESIGNS.

THE UNITED STATES.

51,176. Jar ring. Term 14 years. Patented Sept. 15, 1915. R. Beynon, Cleveland, Ohio, assignor to The Mechanical Rubber Co., a corporation of New Jersey.

RUBBER TRADE INQUIRIES.

THE inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

[362.] A subscriber asks for the name of a manufacturer of rubber ink sacks for self-filling fountain pens.

[363.] A manufacturer inquires for the names of concerns manufacturing or dealing in rubber thread for elastic webbing.

[364.] A correspondent requests information as to where he can obtain a small quantity of pure benzol.

[365.] An inquiry has been received for the names of dealers in accroides gum.

[366.] A subscriber desires to know where he can obtain tensilite and velocite.

[367.] A correspondent asks for the name of a house selling glass tubing suitable for mandrels for vulcanizing inner tubes.

[368.] A manufacturer requests the name of a house which can supply him promptly with wooden molds for making surgeons' rubber gloves.

[369.] A correspondent complains of having difficulty with cast-iron rubber molds becoming pitted and asks for information as to how to overcome this condition.

[370] A prospective purchaser inquires for information as to available tire plants, fully equipped.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

Reserved addresses may be obtained from the Bureau of Foreign and Domestic Commerce and its district or cooperative offices. Request for each opportunity should be on a separate sheet and the opportunity number stated.

[26,038.] A firm in Italy wishes to purchase insulated and cotton-coated electric wire.

[26,086.] A man in Portugal desires to buy sulphur.

[26,087.] A man in Argentina desires to represent, on a commission basis, manufacturers and exporters of general merchandise, including suspenders and garters.

[26,109.] A company in Canada wishes to secure an agency for the sale of caustic soda, lamp and bone black, litharge, whiting, China clay, sulphur, etc.

[26,117.] A company in India desires to secure an agency for the sale of rubber, hair or cotton belting of the best quality.

[26,145.] A firm in Tasmania is in the market for sporting goods, also for white rubber-soled shoes.

[26,159.] A firm in Ecuador desires to purchase general merchandise and notions, including fine-toothed rubber combs.

[26,173.] An agency is desired by a man in Portugal for office supplies, including pencil erasers.

[26,180.] A firm in Switzerland is in the market for rubbers of different kinds for women, men and children; snow boots, with one, two and three buckles, and rubber boots of all kinds.

[26,192.] A company in Switzerland wishes to purchase and secure an agency for the sale of artificial leather, rubber bed sheetings and surgical goods.

INQUIRY IN REGARD TO CHEMICAL INDUSTRIES.

The Tariff Commission is undertaking an inquiry into the significant developments that have taken place in the chemical industries since the passage of the tariff act of 1913. Changes which seem likely to alter permanently the conditions of international competition or the course or volume of foreign trade are to be special subjects of study.

All persons having direct knowledge of pertinent facts in regard to any particular industry or product are invited to submit a statement to the United States Tariff Commission, Washington, D. C. Among the matters on which the commission desires as full and complete information as possible is the following: the discovery of new uses of materials, creating a new demand or furnishing a market for materials formerly wasted; for example, the use of aniline as an accelerator in the vulcanization of rubber.

INTERESTING LETTER FROM A READER.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR.—With your editorial on page 133 of the December issue, "Conservation of Rubber Fabrics and Solvents," I agree heartily. The need of solventless cement you picture so well in the last sentence of that article.

If manufacturing chemist and rubber manufacturer work together, valuable progress will be made. There is no rubber paper edited in the whole world which does as much to bring about this cooperation as THE INDIA RUBBER WORLD.

The important item, saving of fabrics, ought to be brought about in a considerable manner by saving the fabric in the reclaiming process. I have worked successfully in this direction and shall report on this subject at a later time.

DR. HUGO H. HARDING, Chemist.

Chicago, Illinois, December 12, 1917.

Crude Rubber During 1917.

THE crude rubber market for the year opened with a continuance of the general upward trend that commenced late in October, 1916. All grades had been in good demand throughout November. The larger manufacturing interests indulged in heavy buying in plantations during the first half of December, and Para sorts and Centrals moved freely in sympathy with this buying activity. Although prices had fluctuated considerably, gains were recorded in the entire list with plantations leading. The holiday season brought the usual easier tone, and on December 27, First latex crêpe, spot was 76 cents, and Upriver fine, spot, 79 cents.

Two days later First latex had regained its lead at 79 cents and Upriver fine 78 cents; these prices held on January 1. The month proved to be dull, the season being generally unfavorable for large buying. Leading manufacturers were well stocked and contract deliveries were arriving regularly, their requirements having been covered far enough ahead to avoid bulling the market. Reports of ample plantation production and surplus London stocks were also factors. On January 27 First latex crêpe, spot, was easy at 74 cents; Upriver fine, spot, was steady at 77 cents.

February 1 found Upriver fine, spot, still at 77 cents with First latex crêpe, spot, advanced to 75-75½ cents. Early in the month the unfavorable shipping situation, following the announcement of Germany's submarine blockade, caused grave uncertainty. Low spot stocks and the possible loss of cargoes afloat caused an erratic market with prices fluctuating violently after the diplomatic break with Germany. On February 5, First latex crêpe and Ribbed smoked sheet, spot, ranged from 86 to 88 cents with April-June positions at 81 to 83 cents. Upriver fine, spot, was quoted at 82 to 84 cents. Manufacturers became apprehensive, general trading was active and the market steadily advanced until on February 15, First latex crêpe, spot, and Ribbed smoked sheet, spot, had reached 91½ cents, with April-June positions at 83½ cents. Upriver fine, spot, was firm and in good demand at 86 cents. Rubber continued to arrive in considerable volume, however, and with no overt act on the part of Germany the market became easier and prices gradually declined until on March 1, First latex crêpe, spot, was quoted at 86½ cents, Upriver fine, spot, at 80 cents. This gradual decline, with relatively minor fluctuations, continued through the year until December 14.

March proved to be a quiet month, all except small buyers adopting a policy of watchful waiting. Local freight embargoes and railroad disturbances were also factors. Although rubber arrivals were about normal, very little spot rubber was available. The market softened early in the month, and minor fluctuations followed, netting a considerable decline. On April 1 market conditions were generally strong and prices firm, First, latex crêpe, spot, being 81 cents, Upriver fine, spot, 76½ cents.

Despite the declaration of war against Germany, the advanced cargo rates and the delay in shipments due to scarcity of bottoms, unfavorable financial conditions in the Middle East, and railroad priority orders in this country, steady market conditions prevailed throughout April with only minor price changes. On May 1, First latex crêpe, spot, had advanced to 83-83½ cents while Upriver fine, spot, had fallen to 75 cents.

As the shipping situation became complicated during May, considerable business developed in spot and nearby rubber of all grades. Actual buying in futures was negligible. Both plantations and Paras were generally steady, the tendency being slightly upward, gains of 1½ and 2 cents, respectively, having been reached on May 26. Upriver coarse, Centrals and Africans, spot and nearby, were also very strong, Centrals selling higher than caucho ball. On June 1, however, prices showed a slight decrease for the month, First latex crêpe, spot, being 80 cents, Upriver fine, spot, 75 cents with Upriver coarse at 53 cents.

June was characterized by seasonable dullness. Extremely heavy arrivals of overdue contract rubber left considerable spot stocks in dealers' hands, resulting in heavy liquidation that was the cause of the steady downward trend during the month to which the removal from the War Revenue Law of the proposed 10 per cent tax on crude rubber also contributed. Substantial orders in futures were placed when the quotation of 64 cents had become fairly well established for most 1918 positions.

On July 1, First latex crêpe, spot, was quoted at 61½ cents and Upriver fine, spot, at 69. The month was generally dull, manufacturers showing little interest in spot rubber, and pro-

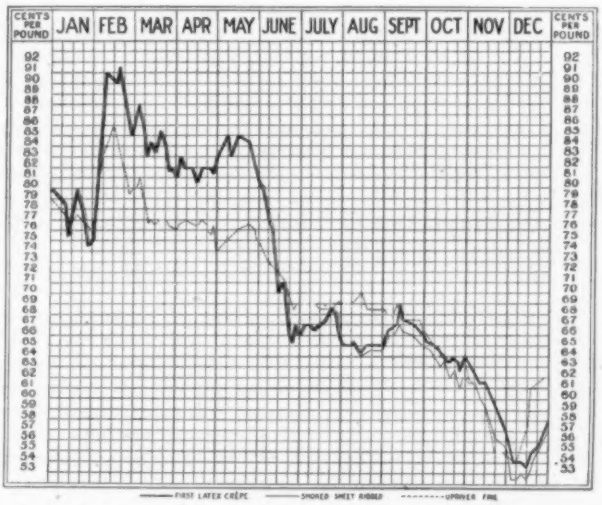

CENTS PER POUND
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
CENTS PER POUND
FIRST LATEX CRÊPE
SMOKED SHEET RIBBED
UPRIVER FINE

CHART SHOWING FLUCTUATIONS IN PLANTATION AND PARA SPOT RUBBER, 1917.

ducers little desire to sell futures because of shipping uncertainties. Prices were steady with slight changes until, following the upward swing in London toward the end of the month, First latex crêpe, spot, advanced to 67 cents on August 1, with Upriver fine, spot, dull but firm at 68-69 cents.

August proved to be quiet as usual. Large buyers ignored the spot market and futures firmly held at a premium above spot prices naturally had no interest for them. The experience of producers who sold futures at low figures in 1916 doubtless explains their attitude. On September 1, First latex crêpe, spot, had dropped to 61½ cents, while Upriver fine, spot, remained firm at 68-69 cents, having been forced up to 70½ cents during the month. Stocks of Caucho ball were plentiful and cheap, but in little demand. Africans were practically neglected, while Centrals were scarce at firm prices.

Extreme dullness amounting almost to stagnation ruled the market during September, October, November and the early part of December, and prices declined steadily, failing to respond as promptly as previously to London market fluctuations. Stocks accumulated steadily at Pacific ports, yet mills not amply supplied managed to meet their immediate requirements without disturbing the easy undertone that characterized all grades of rubber, and manifested only a slight and cautious interest in futures. First latex crêpe, spot, dropped from 65½ cents on October 1 to 63½ cents on November 1, 56 cents on December 1, and reached its lowest point at 53½ cents on December 14, with January-June futures at the same figure. On that date Smoked sheet ribbed, spot and January-June positions, fell to 52½ cents. Upriver fine, spot, correspondingly dropped from 66½ cents on

October 1 to 63½ cents on November 1 and to 55 cents on December 1. While it started downward in the general market decline of early December, the reported establishment of a minimum price of 66 cents by the Brazilian Government and the scarcity of spot stocks strengthened Para values, which steadily rose during the balance of the month.

About the middle of December short sellers began buying to cover December contracts. Spot rubber soon became scarce due to the slowness of overland freight arrivals caused by severe weather conditions, and prices moved upward until on December 27, First latex crêpe, spot, was quoted at 55-55½ cents, Upriver fine, spot, 61½-62 cents. During the last week of the year the usual holiday quiet prevailed, but the market tone was firm. Plantations were about the same as on the first of the month, while Paras had advanced materially. Trading in Africans was limited, but prices were higher. Centrals were in active demand. Old stocks had been drawn upon, arrivals had been few, and prices on all grades were higher.

Balata and gutta percha have been in good demand throughout the year, with supplies limited. Surinam sheet began the year at 75 cents and reached 90-98 cents in May, followed by a gradual decline with many fluctuations to 77 cents in October, rising thereafter to 83½ cents on December 27. Gutta percha began the year at $1.90, and after dropping in March to 85 cents, rose to $2.20-$3 in June. Downward fluctuations followed to $2 in October, November and December, but on December 27 it had risen again to $2.50-$3.

THE LONDON VIEW OF THE 1917 MARKET.

DURING 1917 the immense consumption of crude rubber still further increased, despite the great curtailment due to industrial chaos in Russia and war conditions in England, France and Italy, where the high cost of gasoline and oils, restrictions necessary for economy, and the requisitioning of men and works for munition manufacturing have all tended to confine the use of motor cars to government and essential commercial purposes. But whereas the production of pneumatic tires has been greatly lessened, the output of solid tires has been much increased, and trucks, traction and agricultural wagons of many kinds are rapidly coming into wider use. No doubt the great demand for rubber for war purposes has added to the consumption in America, but the universal use of automobiles in the United States has also been a considerable factor. With America in the war, however, and the production of pleasure vehicles likely to be curtailed, this outlet may not continue to maintain its normal rate of increase.

Continued growth of the American tire industry and the demands of the war have therefore made the year's consumption of crude rubber nearly equal to production, yet the world's available stock to-day is greater than ever before. The total visible supply in December 31 was estimated at about 30,500 tons, 13,000 tons afloat and 17,500 tons in British, American, Russian and East Indies stocks, or about 20,000 tons more than at the end of 1916. British stocks on December 31 totaled 12,930 tons as follows: Plantation, 11,370 tons; Para, 151 tons; other kinds, 1,409 tons. British imports and deliveries of all sorts for the year were 67,036 and 64,668 tons respectively. Of these amounts 57,025 and 54,886 tons, respectively, were other than Para and Peruvian.

THE MARKET.

During the first half of 1917 prices were generally favorable to sellers. Pale crêpe began at 3*s.*, and brought as high as 3*s.* 5*d.* in February, after which prices declined until 2*s.* 5*d.* was accepted in June.

During the last half of the year considerable speculation was attempted by outsiders in an endeavor to force prices upward on account of German submarine activities, scarcity of ship tonnage to this country and the fact that rubber is one of the few articles that has not advanced greatly in price. Although pale crêpe reached 2*s.* 10¾*d.* in September, and 3*s.* 0¾*d.* was paid for forward delivery in the early autumn, the attempt was entirely unsuccessful. It accounted, however, for the large fluctuations toward the end of the year, when spot and near delivery sold down to 2*s.* 2½*d.* Pale crêpe closed on December 31 at 2*s.* 6¼*d.*

Complaints of poor quality and claims have decreased, showing greater care in the preparation and shipment of plantation rubber.

Considerable contracts have been entered into c. i. f., f. o. b., or ex godown in the East, and London brokers are selling regularly to American Pacific ports.

Prices of Para and Manaos have been well sustained and frequently have shown a considerable premium over plantations. The large daily supply of the latter from the Middle East, sold forward or on arrival, has naturally affected the demand for all Brazilian grades. Imports of medium descriptions have generally fallen off. For certain grades a fair demand has prevailed, but inferior, soft, weak rubbers have sold with difficulty at low prices.

In January hard fine Para ranged from 3*s.* 2*d.* to 3*s.* 3½*d.* and in February brought as high as 3*s.* 4½*d.* Then occurred a gradual decline until 2*s.* 11¼*d.* was reached in August, followed by a rise to 3*s.* 5*d.* in October as a result of the attempted speculation in plantations. Hard fine Para sold as low as 2*s.* 5½*d.* in December, however, and closed on December 31 at 2*s.* 8½*d.*

The following closing prices for recent years may be of interest:

	Hard Fine Para.	Negrohead Scrappy.	Negrohead Island.	Caucho Ball.
1914	2*s.* 10¾*d.*	2*s.* 1½*d.*	1*s.* 3*d.*	2*s.* 4*d.*
1915	3*s.* 9*d.*	2*s.* 10*d.*	1*s.* 7*d.*	3*s.*
1916	3*s.* 3*d.*	1*s.* 11*d.*	1*s.* 3*d.*	2*s.* 2*d.*
1917	2*s.* 8½*d.*	1*s.* 5*d.*	1*s.*	1*s.* 6½*d.*

A good demand throughout the year doubled the price of jelutong, while balata sheet closed at 3*s.* 11½*d.* and block at 3*s.* 5½*d.* as compared with 3*s.* 2½*d* and 2*s.* 1½*d.*, respectively, at the end of 1916. Gutta-percha in good qualities also realized high prices.

THE WORLD'S PRODUCTION.

The world's total production of crude rubber of all grades is estimated by authorities at about 240,500 tons, an increase of nearly 40,000 tons, or about 20 per cent. The greater output of plantations in the Far East is chiefly responsible for this, about 80 per cent of the world's total production now coming from that source. Despite the labor shortage on these great estates, their rapid growth continues, as shown by the following table of the total production of crude rubber for the last three years:

	1917.	1916.	1915.
Ceylon and India.....*tons*	25,000	24,500	20,600
Malaya, Dutch East India, etc.....	165,000	105,500	72,809
Amazonas (Brazil, Bolivia).....	31,771	28,255	30,700
Peruvian and Caucho.....	9,729	8,245	6,800
West Coast, Africa.....	3,000	2,000	2,500
Benguela and Mossamedes.....			1,900
Loanda			600
Congo, French Congo and Soudan.....	3,500	5,000	3,000
From other sources.....	2,500	4,500	7,100
Totals	240,500	178,000*	146,000

* Underestimated. Actual production about 201,600 tons.

The production of South American rubber was somewhat increased as had been anticipated, although including more caucho ball and much less Ceara, Maniçoba, Pernambuco and Assare. Bolivia sent less; Mollendo and Venezuela via the Orinoco, none; Matto Grosso sent a fair crop, Mangabeira, none. Practically all the Amazon rubber has been consumed in 1917. Central America, including Mexico and Nicaragua, together with Colombia and Equador, exported very little rubber, comparatively. Other wild rubbers show no increase. Decreased amounts have been received from West Coast Africa, especially Congo and Soudan, but good qualities sold well from the Niger, Gold Coast, Accra, etc., Cameroons, Sierra Leone, Gaboon, Conakry, French Congo and Soudan. Very little came from East Africa, Madagascar, and Zanzibar. British and formerly German East Africa sent very little Manihot rubber; Nyassaland, none. Abyssinian rubber came in reduced quantity but partly of excellent quality. Penang reduced its supply of wild rubber, also Rangoon and Assam.

Sumatra, Java and Borneo exported less Rambong rubber but more *Hevea*. Amounts coming from Tonkin and Cochin China were very small. New Guinea sent none.

The production of jelutong and balata decreased considerably.

The following table shows the annual receipts and shipments at Para during the years 1915 to 1917:

	1917.	1916.	1915.
Receipts of Para.....*tons*	33,915	28,260	30,595
Receipts of Peruvian.....	9,729	8,245	6,800
Shipments of Para and Peruvian to Europe.	14,320	12,045	14,440
Shipments of Para and Peruvian to America	25,950	22,185	22,960

PLANTATION RUBBER.

Planted areas amounting to about 400,000 acres have been added during 1917, but it is believed that what new planting occurred during 1916 has been counteracted, partly at least, by thinning operations and areas here and there which have gone out of cultivation. Although thinning out is wisely being practised on many plantations, and the number of trees tapped during 1918 may not be as large as some have anticipated, at the normal rate of progress, and with increased yields per acre on the older estates, the 1918 supply must be large unless many planters combine to limit tapping as a few have suggested.

Plantations, chiefly of *Castilloa*, in Mexico, West Indies and Central and South America have shown no progress and the yields have been insignificant. The same is true of Ceara plantations in East Africa. Plantations in India, Burma and the Mergui are being extended.

The approximate plantation acreages for three years past follow:

	1917.	1916.	1915.
Ceylon .....*acres*	290,000	230,000	230,000
Malaya, Malacca	780,000	600,000	550,000
Borneo	40,000	30,000	20,000
Dutch East Indies, Java, Sumatra, etc....	650,000	500,000	450,000
India and Burma	50,000	40,000	40,000
German colonies, Samoa, East and West Africa	10,000	12,000	12,000
Totals	1,820,000	1,412,000	1,302,000

DISTRIBUTION.

The consumption of crude rubber of the various grades, exclusive of large quantities of reclaimed rubber, has been estimated as follows:

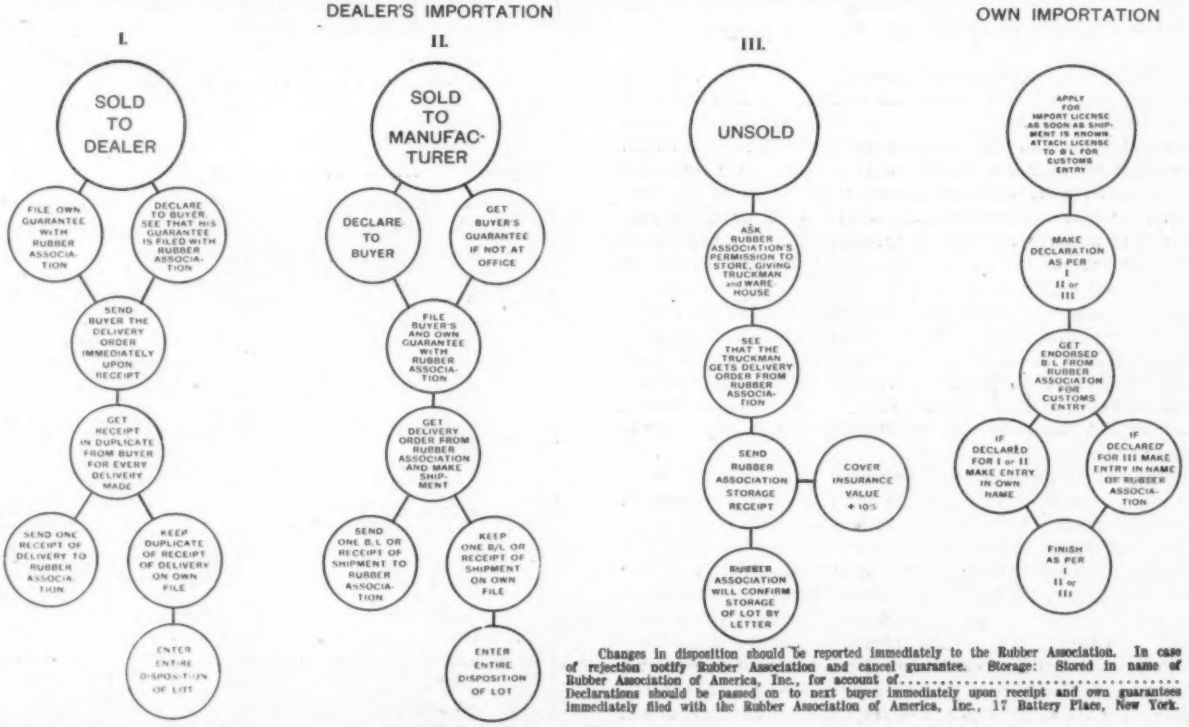
	1917.	1916.	1915.
England .....*tons*	26,000	35,000	24,000
Germany, Austria, etc.....	1,000	1,500	3,000
France	10,000	8,500	7,000
Russia	7,000	20,000	16,000
Italy, Spain, Scandinavia, etc.....	5,500	4,000	2,500
Japan and Australia.....	5,000	5,000	4,000
America and Canada.....	155,000	114,000	89,500
Totals	210,000	178,000*	146,000

All countries show increases except the Teutonic nations and Russia, the United States, France and Italy being most conspicuous. It will be noticed that the Russian consumption decreased nearly two-thirds as a result of chaotic industrial conditions following the revolution.

* Underestimated.

[The figures and information used in the above review were supplied by S. Figgis & Co., of London.]

THE RULES AND REGULATIONS COVERING UNITED STATES CRUDE RUBBER IMPORTATIONS.


DEALER'S IMPORTATION
OWN IMPORTATION
I.
SOLD TO DEALER
FILE OWN GUARANTEE WITH RUBBER ASSOCIATION
DECLARE TO BUYER SEE THAT HIS GUARANTEE IS FILED WITH RUBBER ASSOCIATION
SEND BUYER THE DELIVERY ORDER IMMEDIATELY UPON RECEIPT
GET RECEIPT IN DUPLICATE FROM BUYER FOR EVERY DELIVERY MADE
SEND ONE RECEIPT OF DELIVERY TO RUBBER ASSOCIATION
KEEP DUPLICATE OF RECEIPT OF DELIVERY ON OWN FILE
ENTER ENTIRE DISPOSITION OF LOT
II.
SOLD TO MANUFACTURER
DECLARE TO BUYER
GET BUYER'S GUARANTEE IF NOT AT OFFICE
FILE BUYER'S AND OWN GUARANTEE WITH RUBBER ASSOCIATION
GET DELIVERY ORDER FROM RUBBER ASSOCIATION AND MAKE SHIPMENT
SEND ONE B.L OR RECEIPT OF SHIPMENT TO RUBBER ASSOCIATION
KEEP ONE B/L OR RECEIPT OF SHIPMENT ON OWN FILE
ENTER ENTIRE DISPOSITION OF LOT
III.
UNSOLD
ASK RUBBER ASSOCIATION'S PERMISSION TO STORE, GIVING TRUCKMAN and WAREHOUSE
SEE THAT THE TRUCKMAN GETS DELIVERY ORDER FROM RUBBER ASSOCIATION
SEND RUBBER ASSOCIATION STORAGE RECEIPT
COVER INSURANCE VALUE + 10%
RUBBER ASSOCIATION WILL CONFIRM STORAGE OF LOT BY LETTER
APPLY FOR IMPORT LICENSE AS SOON AS SHIPMENT IS KNOWN. ATTACH LICENSE TO B.L FOR CUSTOMS ENTRY
MAKE DECLARATION AS PER I II or III
GET ENDORSED B.L FROM RUBBER ASSOCIATON FOR CUSTOMS ENTRY
IF DECLARED FOR I or II MAKE ENTRY IN OWN NAME
IF DECLARED FOR III MAKE ENTRY IN NAME OF RUBBER ASSOCIATION
FINISH AS PER I II or III

Changes in disposition should be reported immediately to the Rubber Association. In case of rejection notify Rubber Association and cancel guarantee. Storage: Stored in name of Rubber Association of America, Inc., for account of.....
Declarations should be passed on to next buyer immediately upon receipt and own guarantees immediately filed with the Rubber Association of America, Inc., 17 Battery Place, New York.

EXPORTS OF INDIA RUBBER AND CAUCHO FROM PARA AND MANAOS, DURING NOVEMBER, 1917.

EXPORTERS.	NEW YORK. Fine.	Medium.	Coarse.	Caucho.	Totals.	EUROPE. Fine.	Medium.	Coarse.	Caucho.	Totals.	Grand Totals.
Stowell & Co.....*kilos*	91,028	3,287	52,850	49,337	196,502	216,141	13,690	6,275	.....	236,106	432,608
General Rubber Co.....	101,054	6,863	50,830	33,267	192,014	196,165	6,224	3,808	.....	206,197	398,211
J. Marques	104,932	15,516	115,031	12,819	248,298	18,020	.....	.....	.....	18,020	266,318
Pires Teixeira & Co.....	51,458	2,785	48,063	31,672	133,978	88,666	5,694	2,122	.....	96,482	230,460
G. Fradelizi & Co.....	43,130	.....	35,217	4,115	82,462	95,205	7,214	1,188	.....	103,607	186,069
Chamié & Co.....	20,400	.....	13,530	.....	33,930	47,430	.....	3,300	.....	50,730	84,660
Adelbert H. Alden, Limited...	.....	.....	3,636	.....	3,636	71,002	3,902	.....	.....	74,904	78,540
Suarez, Hermanos & Co., Limited.	24,932	202	114	20,456	45,704	.....	.....	.....	.....	.....	45,704
Bitar Irmãos	1,380	.....	158	1,047	2,585	2,880	1,280	.....	3,000	7,160	9,745
Sundries	14,015	487	20,802	19,117	54,421	61,410	2,810	6,360	1,050	71,630	126,051
Totals	452,329	29,140	340,231	171,830	993,530	796,919	40,814	23,053	4,050	864,836	1,858,366
From Manaos	397,856	30,917	181,214	287,351	897,338	922,995	92,430	11,480	597	1,027,502	1,924,840
Totals	850,185	60,057	521,445	459,181	1,890,868	1,719,914	133,244	34,533	4,647	1,892,338	3,783,206

Compiled by Stowell & Co.

Review of the Crude Rubber Market.

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NEW YORK.

CONTINUED buying early in January on the part of dealers to cover December short sales, resulted in a firm spot market for all grades and prices moved upwards. A few small manufacturers responded to the movement but the scarcity of spot rubber being apparent the demand subsided and the market became easier. As the month progressed very little activity was noticed other than emergency orders due to delayed Pacific Coast arrivals. The railroad congestion, followed by the Government's factory closing orders and freight embargoes greatly restricted the demand for crude rubber during the last two weeks of the month when easier conditions prevailed. Spot stocks, however, continued to be scarce, prices were firm, and futures appeared to be interesting only to dealers. Rubber is piling up at the Pacific Coast ports, due to the western freight embargo, with small prospect of release short of four to six weeks.

A circular has been sent by the Rubber Growers' Association, London, to the rubber planters of the Far East, recommending a 20 per cent reduction in the 1918 production. The estimated world's production of Plantations for 1917 is 220,000 tons and a 20 per cent reduction would mean a shortage of 44,000 tons, an amount approximately equal to the annual plantation requirements of three of the large rubber companies.

PLANTATIONS. Shortage of spot and nearby, particularly Ribbed smoked sheet, and a firm undertone but gradually declining prices, were the features of this market during the past month when ribs recorded a premium of 2 cents over latex. January 2, the quotations on First latex crêpe spot, were 61 cents; January-June, 58½ cents. Ribbed smoked sheet was 60 cents for spot and nearby with January-June futures at 57½ cents. These were the highest values for the month. However, prices soon eased off, then recovered again through manufacturers' buying, but the Government's factory closing order and the freight embargoes finally resulted in easier prices and a dull market. First latex crêpe, spot, was 55 cents on January 29; February-April, 54 cents. Ribbed smoked sheet was 56 cents; February-April, 53 cents.

PARAS. These grades have not been in much demand but the undertone has been generally firm throughout the month, despite the dullness of the market. At one time the market at Para was from 1 to 2 cents higher than New York spot quotations. The highest New York prices for the month were quoted on January 2 when Upriver fine, spot, was 62 cents, Islands fine, 50½ cents, and Caucho ball, upper, 41 cents. Following the trend of the general market, prices declined, and January 29, Upriver fine, spot, was 58 cents, Islands fine, 47 cents and Caucho ball, upper, 37 cents.

AFRICANS. This market is practically lifeless, due to the absence of regular supplies. Prices quoted are largely nominal.

CENTRALS. All grades have been quiet due to the fact that prices are too high to compete with the lower-priced Brazilian sorts. Supplies are plentiful but are being held for higher prices by specific selling orders.

LONDON.

A fair amount of buying has maintained firm prices in this market for the greater part of the past month. The last two weeks, however, were generally dull and devoid of features. The trend of prices has been downward since January 7, when First latex crêpe, spot, was quoted 29½*d.* and Ribber smoked sheet 29¼*d.* On January 28, the cables quoted, First latex crêpe, spot, 27¼*d.* and Ribbed smoked sheet 27*d.*

STATISTICS. London and Liverpool imports for November were 11,401,100 pounds, value £1,504,239, compared with 9,072,900 pounds, value £1,128,927, for October. Reexports for November were 4,386,100 pounds, value £565,563, compared with 7,038,200 pounds, value £923,206, for October.

SINGAPORE.

Early in the past month the demand was fairly active for all descriptions and prices advanced This movement, however, lacked support when the market declined and continued to be easy until the close of the month. According to the auctions held January 7, 11, 19 and 26, the average price obtained for First latex crêpe was 42.92 cents and for Ribbed smoked sheet was 41.86 cents. The amount sold was 2,295 tons.

NEW YORK SPOT QUOTATIONS.

Following are the New York spot quotations one year ago, one month ago and January 27, the current date.

	Feb. 1, 1917.		Jan. 2, 1918.		Jan. 29, 1918.	
PLANTATION HEVEA—						
First latex crêpe, *Hevea first crepe	75	@75½	61	@	55	@
Amber crêpe No. 1	71	@	53	@	49	@
Amber crêpe No. 2		@	52	@	47	@
Amber crêpe No. 3		@	51	@	45	@
Amber crêpe No. 4		@	50	@	43	@
Brown crêpe, thick clean	70	@71	50	@	43	@
Brown crêpe, thin clean		@		@	43	@
Brown crêpe, thin specky		@		@	40½	@
Brown crêpe, rolled		@		@	31½	@
Smoked sheet, ribbed standard quality, *Hevea ribbed smoked sheets	75	@75½	60	@	56	@
Smoked sheet, plain standard quality, *Hevea plain or smooth smoked sheets		@		@	55	@
Unsmoked sheet, standard quality, *Hevea unsmoked sheets		@		@	49	@
Colombo scrap, No. 1		@		@	43	@
Colombo scrap, No. 2		@		@	40	@
BRAZILIAN PARAS—						
Upriver fine	77	@	62	@	58	@
Upriver medium		@		@	52	@
Upriver coarse	50	@	42	@	38	@
Upriver weak fine		@		@	40	@
Upper caucho ball	51	@	41	@	37	@
Islands fine	72	@	50½	@	47	@
Islands medium		@		@	40	@
Islands coarse	31	@	26½	@	24½	@
Cametá coarse	32	@	26½	@	24½	@
Lower caucho ball	49	@		@	31½	@
Peruvian fine		@		@	53	@
Tapajos fine		@		@	53	@
AFRICANS—						
Accra flake, prime	30	@	48	@	46	@47
Niger flake, prime	30	@	48	@	46	@47
Benguela, extra No. 1, 28%	41	@		@	29	@
Benguela, No. 2, 32½%	44	@		@	28	@
Congo prime, black upper		@	50	@	46	@47
Congo prime, red upper		@	50	@	46	@47
Rio Nunez ball	62	@63		@	63	@
Rio Nunez sheets and strings		@		@	63	@
Conakry niggers	60	@62		@	63	@
Massai sheets and strings	60	@		@	63	@
CENTRALS—						
Castilloa block		@		@	48	@
Corinto scrap	49	@	40	@40½	37	@
Esmeralda sausage	47	@48	39½	@	36	@
Central scrap	47	@	38	@	35	@
Central scrap and strip		@	36	@	33	@
Central wet sheet	31	@		@	25	@26
Guayule	42	@44	28	@	27	@28

MANIÇOBAS—						
Ceara negro heads		@	35	@	32	@
Ceara scrap		@	25	@	28	@
Maniçoba special	42	@	33	@	41	@
Maniçoba extra		@		@	36	@
Maniçoba regular		@		@	33	@
Mangabeira thin sheet	40	@	31	@	40	@
Mangabeira thick sheet		@		@	35	@
EAST INDIAN—						
Assam crêpe	50	@	46	@	37	@
Assam onions		@		@	36	@
Penang block scrap		@		@	34	@
Borneo, No. 2		@		@	24	@
No. 3		@		@	18	@
BALATA—						
Block, Ciudad Bolivar	64	@	72	@	72	@73
Colombia		@		@	54½	@55
Panama		@		@	51	@51½
Surinam sheet	78	@	83½	@	86	@87
amber		@		@	86	@
fair average quality		@		@	82	@
PONTIANAK—						
Pressed block	9¼	@	20	@20½	18	@20
Banjermassin		@		@	13	@
GUTTA PERCHA—						
Red Macassar	1.90	@	2.50	@	2.00	@2.30
Gutta Siak		@	21	@	20	@

*Rubber Association of America nomenclature.
**Nominal.

MARKET CABLE SERVICE FROM LONDON.

The following market report has been cabled by Alden's Successors, Limited, London:

	Standard Crêpe.	Ribbed Smoked Sheets.	Market.
December 31	30 *d.*	29½*d.*	Buyers
January 7	29½*d.*	29¼*d.*	Firmer
January 14	28¾*d.*	28½*d.*	Firmer
January 21	27¾*d.*	27½*d.*	Dull

MARKET CABLE SERVICE FROM SINGAPORE.

The following reports of the weekly auctions held at Singapore have been cabled by The Waterhouse Co., Limited:

Date.	Crêpe. Price per lb.	Smoked Sheet. Price per lb.	Tons Sold.	Market.
Jan. 7...*cents*	44.63	44.63	733	Good demand for all descriptions, and prices advancing.
Jan. 11.....	43.35	43.35	464	Slightly weaker, with less demand.
Jan. 19.....	42.50	40.38	458	Steady, with an improved demand.
Jan. 26.....	41.23	39.10	640	Steady; fair business doing.

THE MARKET FOR COMMERCIAL PAPER.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York), advises as follows:

"The demand for commercial paper during January has been light, both from city banks and those out of town, and the ruling rates on the best rubber names have been about 6 per cent to 6¼ per cent, and those not so well known 6½ per cent and above."

COMPARATIVE HIGH AND LOW RUBBER PRICES.

	January.		
Plantation:	1918.*	1917.	1916.
First latex crêpe	$0.56½@0.61	$0.74½@0.80	$0.75@1.05
Smoked sheet ribbed	.56½@ .60	.74½@ .80	.75@1.05
Paras:			
Upriver, fine	.57½@ .62	.76 @ .79	.73@ .99
Upriver, coarse	.37 @ .42	.49 @ .53	.64@ .77
Islands, fine	.47 @ .51	.68 @ .72	.77@ .90
Islands, coarse	.24½@ .26½	.31½@ .33	.40@ .50
Cametá	.24½@ .26½	.33 @ .34	.43@ .52

*Figured only to January 22.

WEEKLY RUBBER REPORT.

GUTHRIE & CO., LIMITED, Singapore, report [December 13, 1917]: Following advices of declining prices in the London and American markets, the rubber auction opened yesterday with a very weak tone, the earlier sellers having had to buy in practically the whole of their catalogs. Some demand was disclosed in the latter part of the sale, but prices show a reduction all around as compared with last week. Fine pale crêpe was the strongest feature, and sold up to $101 per picul, which is $1 below last week's best. Ribbed smoked sheet was in less demand, and the highest paid was $96, a decline of $5. Off-quality lots were almost unsalable. Lower grades were fairly well taken up at an average of about $5 below last week's prices. Out of 1,000 tons catalogd, only 236 tons were sold.

The following was the course of values:

	In Singapore per Picul.*	Sterling Equivalent per Pound in London.	Equivalent per Pound in Cents.
Sheet, fine ribbed smoked	$90@ 96	1/11¾@2/ 0¾	38.25@40.80
Sheet, good ribbed smoked	70@ 89	1/ 7¼@1/11½	29.75@37.83
Sheet, plain smoked	..@ ..	....@....	.....@.....
Sheet, ribbed unsmoked	..@ ..	....@....	.....@.....
Sheet, plain unsmoked	65@ ..	1/ 6½@....	27.63@.....
Crêpe, fine pale	95@101	2/ 0½@2/ 1¾	40.38@42.93
Crêpe, good pale	75@ 94	1/ 8¼@2/ 0¼	31.88@39.95
Crêpe, fine brown	70@ 80	1/ 7¼@1/ 9¼	29.75@34.00
Crêpe, good brown	52@ 70	1/ 3¾@1/ 7¼	22.10@29.75
Crêpe, dark	40@ 56	1/ 0⅜@1/ 4¼	17.00@23.80
Crêpe, bark	30@ 45	-/10¾@1/ 2	12.75@19.13
Scrap, virgin and pressed	30@ 33	-/10¾@-/11⅜	12.75@14.03
Scrap, loose	..@ ..	....@....	.....@.....

*Picul = 133⅓ pounds.
Quoted in S. S. dollars = 2/4 [56.7 cents].

IMPORTS OF CRUDE RUBBER AT CEYLON.

NOVEMBER 5-19, 1917.

From—	Pounds.	From—	Pounds.
MALAY PENINSULA:		BURMA:	
Singapore	74,056	Rangoon	1,356
Port Swettenham	59,720		
Penang	24,510	Total	212,408
Total	158,286	Total imports from January 1 to November 19, 1917:	
INDIA:		From—	
Tuticorin	43,958	Malay Peninsula	2,032,915
Alleppi	7,933	India	920,393
Bombay	875	Burma and other countries	22,573
Total	52,766	Total	2,975,881

IMPORTS OF RUBBER AND GUTTA AT SINGAPORE.

November 1-30, 1917.

From—	Para Rubber.	Para Rubber for Treatment.	Borneo Rubber.	Gutta Percha.	Gutta Jelutong.
Malay Peninsula—					
Port Swettenham...*lbs.*	3,823,067	215,067	.....	.....	.....
Teluk Anson	2,359,200	.....	.....	.....	.....
Penang	1,715,600	712,667	.....	.....	.....
Malacca	1,360,400	791,867	.....	.....	.....
Muar	660,267	147,867	.....	.....	.....
Port Dickson	642,667	.....	.....	.....	533
Kelantan	195,867	50,133	.....	.....	.....
Kuantan	67,200	.....	.....	.....	.....
Mersing	31,333	.....	.....	.....	.....
Rengat	15.600	6,000	.....	.....	.....
Pekan	4,133	.....	.....	.....	.....
Kota Baroe	3,467	.....	.....	.....	.....
S. Pandjang	1,333	.....	.....	.....	.....
Pahang	933	.....	.....	.....	.....
Tringganu	800	.....	.....	.....	.....
Totals	10,881,867	1,923,601	.....	.....	533
Borneo—					
Jesselton	218.000	158,667	267	800	37,600
Sarawak	189,600	10,933	1,867	18,267	133,067
Pontianak	130,667	.....	4,000	10,933	128,933
Sibu	64,667	.....	2,933	9,600	226,533
Sandakan	58,000	8,133	667	.....	.....
Sambas	50,800	.....	2,667	.....	2,667
Labuan	50,533	32,267	800	5,467	18,533
Bandjermassin	46,800	24,000	.....	10,800	88,667
Kudat	24,267	12,933	.....	.....	.....
Singkawang	11,333	.....	.....	.....	.....
Samarinda	1,867	.....	400	15,200	.....
Sampit	400	.....	267	.....	30,800
Totals	846.934	246,933	13,868	71,067	666,800
Sumatra—					
Djambi	283,600	.....	.....	.....	.....
Deli	156,667	935,467	.....	.....	.....
Palembang	27,333	.....	2,667	8,267	17,067
Passir	16,667	.....	.....	.....	.....
Asahan	10,800	21,333	.....	.....	.....
Indragiri	10,667	6,667	.....	.....	.....
Siak	9,867	5,733	.....	.....	.....
Siboga	8,000	.....	.....	.....	.....
Muntok	3,733	.....	.....	.....	.....
Bengkalis	2,933	.....	.....	.....	.....
Totals	530.267	969,200	2,667	8,267	17,067

November 1-20, 1917.

From—	Para Rubber.	Para Rubber for Treatment.	Borneo Rubber.	Gutta Percha.	Gutta Jelutong.
Java—					
Soerabaia ..... lbs.	283,867	.....	.....	.....	.....
Batavia	94,533	.....	.....	.....	.....
Tandjong Priok	90,000	.....	.....	.....	.....
Samarang	8,533	.....	.....	.....	.....
Cheribon	2,000	.....	.....	.....	.....
Padang	533	.....	.....	.....	.....
Totals	479,466	.....	.....	.....	.....
Burma—					
Rangoon	22,533	.....	.....	.....	.....
Mergui	4,667	.....	.....	.....	.....
Totals	27,200	.....	.....	.....	.....
Siam—					
Patani	1,200	.....	.....	.....	.....
Bangkok	667	.....	.....	.....	.....
Totals	1,867	.....	.....	.....	.....
China					
Hongkong	1,067	.....	.....	.....	.....
Philippine Islands—					
Jolo	.....	.....	.....	1,867	.....
Zamboanga	.....	.....	.....	533	.....
Totals	.....	.....	.....	2,400	.....
Other ports	212,533	109,467	9,200	15,600	336,800
Grand Totals	12,981,201	3,249,201	25,735	97,334	1,021,200

CRUDE RUBBER ARRIVALS AT THE PORT OF NEW YORK.

The following statistics are not complete, due to Government orders prohibiting access to the record.

[*The Figures Indicate Weight in Pounds.*]

PARAS.

	Fine.	Medium.	Coarse.	Caucho.	Cameta.	Totals.
DECEMBER 12.—By the *Vindeggen*=Pará and Manaos:						
General Rubber Co.....	201,600	.....	26,880	138,900	.....	= 367,380
DECEMBER 12.—By the *Ancon*=Mollendo:						
Muller, Schall & Co....	{ *4,290 ‡4,601	.....	*560	.....	.....	= 9,451
DECEMBER 28.—By the *Cuyaba*=Pará and Manaos:						
General Rubber Co.....	228,400	.....	29,120	80,800	25,700	= 364,020
Pell & Dumont.....	45,000	.....	.....	3,200	.....	= 48,200
H. A. Astlett & Co.....	95,400	13,600	34,800	.....	70,000	= 213,800
Meyer & Brown.....	†59,100	.....	37,600	4,500	42,800	= 144,000
F. R. Henderson & Co..	150,200	12,200	21,400	18,100	8,200	= 210,100
DECEMBER 28.—By the *G. O. H. Ernst*=Mollendo:						
W. R. Grace & Co.....	2,123	.....	.....	.....	.....	= 2,123
JANUARY 6.—By the *Tela*=Pará and Manaos:						
General Rubber Co.....	.....	.....	17,920	13,440	.....	= 31,360
Pell & Dumont.....	23,000	.....	11,000	27,000	.....	= 61,000
W. R. Grace & Co.....	.....	.....	11,018	257,422	10,111	= 278,551
H. A. Astlett & Co.....	261,900	53,500	196,800	119,000	33,200	= 664,400
Meyer & Brown.....	†52,000	.....	80,600	6,800	.....	= 139,400
F. R. Henderson & Co..	50,500	2,060	18,500	32,000	24,200	= 127,260

* Mollendo. † Fine and medium. ‡ Islands Mollendo fine.

ARRIVALS AT THE PORT OF NEW YORK.

PLANTATIONS.

TO NEW YORK.

DECEMBER 28.—By the *Hanna Neilson*=Singapore:

	Pounds.
J. T. Johnstone & Co.....	4,480

JANUARY 19.—By the *City of Madrid*=Colombo:

Meyer & Brown	6,700
Rubber Trading Co.....	4,480

CENTRALS.

DECEMBER 11.—By the *Ancon*=Bahia de Caraquez:

Commercial Bank of Spanish America, Limited	14,000

DECEMBER 11.—By the *Gen. G. W. Goethals*=Manta:

Commercial Bank of Spanish America, Limited	5,250

JANUARY 7.—By the *Advance*=Manta:

Commercial Bank of Spanish America, Limited	21,000

JANUARY 14.—By the *Gen. H. F. Hodges*=Bahia de Caraquez:

Commercial Bank of Spanish America, Limited	21,000

BALATA.

DECEMBER 17.—By the *Prins Willem I*=Paramaribo:

Müller, Schall & Co.....	1,269

AFRICANS.

DECEMBER 24.—By the *Aurania*=Liverpool:

Meyer & Brown.....	22,400

JANUARY 15.—By the *Eurybates*=Liverpool:

Rubber Trading Co.....	4,480

CRUDE RUBBER ARRIVALS AT PACIFIC COAST AS STATED BY SHIPS' MANIFESTS.*

SEATTLE AND TACOMA.

PLANTATIONS.

[*Figured 135 pounds net to the case.*]

TO AKRON, OHIO.

DECEMBER 31.—By the *Antilochus*=Hongkong:

	Pounds.	
Goodyear Tire & Rubber Co...	29,430	
Goldman, Sachs & Co.....	30,240	59,670

†JANUARY 6.—By the *Borneo Maru*=Kobe: (Transshipped from the *Manila Maru.*)

Firestone Tire & Rubber Co.....	1,350

JANUARY 7.—By the *Thordis*=Singapore:

Goodyear Tire & Rubber Co...	307,665	
Firestone Tire & Rubber Co...	378,270	
Rubber Trading Co..... (via Vancouver.)	7,425	693,360
Goodyear Tire & Rubber Co.....		93,690

JANUARY 10.—By the *Protesilaus*=Hongkong:

Goodyear Tire & Rubber Co....	7,020	
Firestone Tire & Rubber Co...	196,290	203,310

JANUARY 14.—By the *Tempaisan Maru*=Singapore:

Goldman & Sachs.....	38,745

TO NEW YORK.

DECEMBER 31.—By the *Antilochus*=Hongkong:

	Pounds.	
L. Littlejohn & Co.....	7,155	
Fred. Stern & Co.....	2,700	
J. T. Johnstone & Co.....	2,025	
H. R. Jefferds.....	14,850	
Whitall & Co.....	160,110	
Arthur Meyer & Co.....	21,195	208,035

JANUARY 7.—By the *Thordis*=Singapore:

Robinson & Co.....	148,905	
Smith & Schipper.....	59,400	
Aldens' Successors, Limited....	66,555	
W. R. Grace & Co.....	25,920	
Arthur Meyer & Co.....	84,240	
L. Littlejohn & Co.....	90,450	
Charles T. Wilson Co., Inc....	47,655	
Rubber Trading Co.....	19,440	
Fred. Stern & Co.....	31,590	
East Asiatic Co.....	11,745	
United States Rubber Co.....	603,315	
Whittal & Co.....	71,010	
Hagemeyer Trading Co.....	7,560	
J. T. Johnstone & Co..... (via Vancouver.)	6,345	1,274,130
T. Johnstone & Co.....	12,690	
Rubber Trading Co.....	8,505	21,195

JANUARY 10.—By the *Protesilaus*=Hongkong:

Arnold & Zeiss.....	103,545	
H. B. M. Consul General.....	14,850	118,395

JANUARY 14.—By the *Tempaisan Maru*=Singapore:

Hagemeyer Trading Co.....	40,500	
Fred. Stern & Co.....	63,045	
Arthur Meyer & Co.....	6,345	
Whittal & Co.....	65,150	
Van Siclen & Co.....	34,560	
Edward Maurer & Co.....	33,750	
East Asiatic Co.....	1,485	
Frank B. Ross & Co.....	30,240	
Aldens' Successors, Limited...	3,510	
Charles T. Wilson Co., Inc...	4,725	284,310

TO SEATTLE, WASH.

DECEMBER 31.—By the *Antilochus*=Hongkong:

Robinson & Co.....	54,540	
Balfour, Guthrie & Co.....	81,540	
Charles T. Wilson Co., Inc....	3,240	
Goodyear Tire & Rubber Co...	180,900	
The B. F. Goodrich Co.....	298,350	
J. T. Johnstone & Co.....	5,940	624,510

JANUARY 7.—By the *Thordis*=Singapore:

Goodyear Tire & Rubber Co....	61,290	
The B. F. Goodrich Co.....	967,275	
Meyer & Brown.....	5,265	
L. Littlejohn & Co.....	535,680	
Robinson & Co.....	19,170	
Fred. Stern & Co.....	32,400	
Arnold & Zeiss.....	92,745	
J. T. Johnstone & Co.....	42,795	
Balfour, Guthrie & Co.....	72,225	
W. R. Grace & Co.....	126,630	
Aldens' Successors, Limited...	179,955	
East Asiatic Co.....	1,620	
Henderson & Korn.....	1,620	
Charles T. Wilson Co., Inc....	3,240	2,141,910

JANUARY 7.—By the *Fushimi Maru*=Yokohama:

Nippon Yusen Kaisha.....	405

JANUARY 10.—By the *Meiten Maru*=—Kobe:

British Consulate, San Francisco	87,885	
British Consulate, New York...	176,175	264,060

JANUARY 10.—By the *Protesilaus*=Hongkong:

	Pounds.
W. R. Grace & Co.....	28,620
Fred. Stern & Co.....	9,990
The B. F. Goodrich Co.....	203,040 241,650

JANUARY 14.—By the *Tempaisan Maru*=Singapore:

L. Littlejohn & Co.....	68,985	
Meyer & Brown.....	18,900	
Rubber Trading Co.....	7,425	
Aldens' Successors, Limited....	18,495	
Arnold & Zeiss.....	78,840	
Adelbert H. Alden, Limited....	23,355	
Robinson & Co.....	31,590	
Fred. Stern & Co.....	49,815	
Obalski & Sweeney, Inc.....	40,500	
J. T. Johnstone & Co.....	38,880	
W. R. Grace & Co.....	42,120	418,905

TO VANCOUVER, BRITISH COLUMBIA.

JANUARY 7.— By the *Thordis*=Singapore:

Canada Winch & Cable Co....	4,590	
Charles T. Wilson Co., Inc...	155,655	
Robert Badenhop & Co.....	48,600	
Hood Rubber Co.....	199,800	
F. E. Partridge Rubber Co....	23,895	432,540

PONTIANAK.

TO SEATTLE, WASH.

JANUARY 7.—By the *Thordis*=Singapore:

L. Littlejohn & Co. (gutta siak).....	53,750

JANUARY 14.—By the *Tempaisan Maru*=Singapore:

L. Littlejohn & Co. (gutta jelutong)	449,200	
Mitsui Bussan Kaisha (sample rubber and gutta percha)....	200	449,400

TO NEW YORK.

JANUARY 7.—By the *Thordis*=Singapore:

The United Malaysian Rubber Co. (gutta untreated)	210,250

JANUARY 14.—By the *Tempaisan Maru*=Singapore:

Mitsui Bussan Kaisha (sample rubber and gutta percha).....	200

TO PORTLAND, MAINE.

JANUARY 14.—By the *Tempaisan Maru*=Singapore:

Mitsui Bussan Kaisha (sample rubber and gutta percha).....	200

TO VANCOUVER, BRITISH COLUMBIA.

JANUARY 14.—By the *Tempaisan Maru*=Singapore:

Mitsui Bussan Kaisha (sample rubber and gutta percha).....	200

SAN FRANCISCO*

PLANTATIONS.

[*Figured 135 pounds net to the case.*]

DECEMBER 20.—By the *Kotsu Maru*=Singapore:

Hood Rubber Co.....	98,415	
Firestone Tire & Rubber Co...	175,365	
Goodyear Tire & Rubber Co....	43,470	

*Footnote.—The figures under this head and under Crude Rubber Arrivals at Pacific Coast as Reported, have been obtained from different sources; repetitions may, therefore, occur.

†Arrived at Tacoma.

	Pounds.	
Charles T. Wilson Co., Inc...	227,745	
Corry, Inc.	51,435	
Arnold & Zeiss.....	52,110	
Robert Badenhop & Co.....	259,065	
L. Littlejohn & Co.....	166,050	
Edward Maurer & Co.....	32,400	
Rubber Trading Co.....	70,875	
J. T. Johnstone & Co.....	214,650	
Fred. Stern & Co.....	16,740	
Meyer & Brown.....	10,530	
East Asiatic Co.....	22,950	
Arthur Meyer & Co.....	6,615	
H. B. M. Consul General.....	369,900	
United States Rubber Co.....2,592,810		4,411,125
¶ DECEMBER 21.—By the *Unkai Maru No. 2*= Yokohama:		
J. T. Johnstone & Co.....	171,585	
Arnold & Zeiss.....	93,285	
Goodyear Tire & Rubber Co...	69,390	
Charles T. Wilson Co., Inc....	91,665	
Robinson & Co.....	24,570	
L. Littlejohn & Co.....	3,375	
William H. Stiles.....	22,680	
Edward Maurer & Co.....	22,680	
E. G. Curry.....	16,065	
Winter Son & Co.....	405	515,700
DECEMBER 31.—By the *Selandia*—Singapore:		
Henderson & Korn.....	73,980	
Aldens' Successors, Limited....	54,405	
L. Littlejohn & Co.....1,439,505		
East Asiatic Co.....	604,530	
Fred. Stern & Co.....	614,655	
Robinson & Co.....	118,530	
Rubber Trading Co.....	57,105	
Arnold & Zeiss.....	126,360	
Goodyear Tire & Rubber Co...	71,280	
Charles T. Wilson Co., Inc....	57,915	
Goldman, Sachs & Co.....	36,720	
United States Rubber Co.....	537,840	3,792,825
JANUARY 2.—By the *Goentoer*=Batavia:		
The B. F. Goodrich Co.....	120,420	
Goodyear Tire & Rubber Co....	10,395	
Robinson & Co.....	60,210	
W. Hammesfahr & Co.....	10,800	
Meyer & Brown.....	40,770	
Equitable Trust Co.....	105,300	
Hagemeyer Trading Co.....	43,740	
G. Amsinck & Co.....	135	
J. T. Johnstone & Co.....	5,940	
Arthur Meyer & Co.....	4,320	
East Asiatic Co.....	26,190	
L. Littlejohn & Co.....	8,910	
Arnold & Zeiss.....	108,000	
Rubber Trading Co.....	6,885	
William H. Stiles.....	28,620	
H. B. M. Consul General.....	59,805	
Stein Hirsch & Co.....	97,335	
W. R. Grace & Co.....	11,610	
J. D. Spreckels.....	135	
Aldens' Successors, Ltd.....	29,025	778,545
JANUARY 3.—By the *Ecuador*=Hongkong:		
Hagemeyer Trading Co.....	5,670	
Rubber Trading Co.....	14,580	
Arthur Meyer & Co.....	7,560	
Robinson & Co.....	31,320	
L. Littlejohn & Co.....	11,880	
East Asiatic Co.....	9,450	
Gravenhorst & Co.....	2,970	
Goodyear Tire & Rubber Co...	8,505	
Fred. Stern & Co.....	15,660	
Meyer & Brown.....	8,640	116,235
JANUARY 4.—By the *Persia Maru*=Hongkong:		
J. T. Johnstone & Co.....	33,480	
L. Littlejohn & Co.....	109,620	
Robinson & Co.....	245,970	
East Asiatic Co.....	16,335	
Goldman Sachs & Co.....	45,360	
The B. F. Goodrich Co.....	120,690	
Winter Son & Co.....	82,755	
Fred Stern & Co.....	7,290	
Rubber Trading Co.....	11,475	672,975
Shortshipped *Korea Maru*:		
The B. F. Goodrich Co.....		270
JANUARY 6.—By the *Governor Forbes*=Singapore:		
Balfour Guthrie & Co.....		2,160
JANUARY 6.—By the *Tempaisan*=Singapore:		
Rubber Trading Co.....	29,160	
L. Littlejohn & Co.....	274,590	
Goldman, Sachs & Co.....	37,800	
Robinson & Co.....	27,540	
William H. Stiles.....	30,240	399,330
JANUARY 7.—By the *Van Cloon*=Batavia:		
Aldens' Successors, Limited....	83,430	
Meyer & Brown.....	140,535	
J. T. Johnstone & Co.....	23,760	
Mitsui & Co., Limited.....	82,755	
Arnold & Zeiss.....	54,810	
Goodyear Tire & Rubber Co...	304,155	
Charles T. Wilson Co., Inc....	17,550	
L. Littlejohn & Co.....	13,500	
Fred Stern & Co.....	5,400	
Robinson & Co.....	42,930	
East Asiatic Co.....	402,165	
H. B. M. Consul General.....	116,235	
W. R. Grace & Co.....	1,755	
Joosten & Janssen.....	365,040	

¶ 232 cases shortshipped.

	Pounds.	
General Rubber Co.....	301,725	
Edward Maurer & Co.....	198,990	
G. Amsinck & Co.....	239,625	
Arthur Meyer & Co.....	6,750	
Hagemeyer Trading Co.....	20,250	
Firestone Tire & Rubber Co....	302,670	2,724,030
PONTIANAK.		
JANUARY 2.—By the *Goentoer*=Batavia:		
British Bank of South America (gutta percha)		34,830

CUSTOM HOUSE STATISTICS.

PORT OF BOSTON, MASS.—DECEMBER, 1917.

IMPORTS:	Pounds.	Value.
India rubber	12,650	$5,204
EXPORTS:		
India rubber boots.....*pairs*	17,563	$59,339
India rubber shoes.....*pairs*	20,202	10,324
Automobile tires	.....	19,547
Belting, hose and packing...	.....	1,702
All other manufacturers of india rubber	.....	15,216
Total	.....	$106,128

PORT OF CHICAGO, ILLINOIS—DECEMBER, 1917.

IMPORTS:	Pounds.	Value.
Manufactures of india rubber	.....	$41

PORT OF CLEVELAND, OHIO—DECEMBER, 1917.

IMPORTS:	Pounds.	Value.
Indian rubber	1,134,330	$557,303
Rubber scrap	240	12
Totals	1,134,570	$557,315

PORT OF THE DISTRICT OF MICHIGAN, MICH.—NOVEMBER, 1917.

IMPORTS:	Pounds.	Value.
Rubber scrap	95,725	$3,290
Manufactures of india rubber	.....	21,538
Total	.....	$24,828
EXPORTS:		
Rubber scrap	6,333	$619
India rubber boots.....*pairs*	1,524	4,383
Automobile tires	.....	6,665
Other tires	.....	94
Belting, hose and packing...	.....	3,517
All other manufactures of india rubber	.....	7,491
Total	.....	22,769

PORT OF NEW ORLEANS, LA.—NOVEMBER, 1917.

IMPORTS:	Pounds.	Value.
India rubber	5,786	$1,957
EXPORTS:		
India rubber boots.....*pairs*	24	$165
India rubber shoes.....*pairs*	917	708
Automobile tires	.....	2,569
Other tires	.....	1,107
Belting, hose and packing...	.....	3,135
All other manufactures of india rubber	.....	2,485
Total	.....	$10,169

PORT OF NEW ORLEANS, LA.—DECEMBER, 1917.

IMPORTS:	Pounds.	Value.
India rubber	16,205	$6,068

PORT OF PHILADELPHIA, PA.—DECEMBER, 1917.

EXPORTS:	Pounds.	Value.
Manufactures of india rubber	.....	$3,845

PORT OF SAN FRANCISCO, CAL.—NOVEMBER, 1917.

IMPORTS:	Pounds.	Value.
India rubber	5,178,694	$2,854,611
Rubber scrap	1,930	320
Manufactures of india rubber	.....	3
Total	.....	$2,854,934
EXPORTS:		
India rubber boots.....*pairs*	5	$23
India rubber shoes.....*pairs*	522	330
Automobile tires	.....	82,599
Other tires	.....	15,526
Belting, hose and packing...	.....	54,570
Druggists' sundries	.....	9,786
All other manufactures of india rubber	.....	16,588
Total	.....	$179,422

PORTS OF SEATTLE AND TACOMA, WASH.—NOVEMBER, 1917.

IMPORTS:	Pounds.	Value.
India rubber 11,255,412		$6,009,490
Gutta jelutong (Pontianak).	213,194	7,809
Manufactures of india rubber	.....	3
Total	.....	$6,017,302
EXPORTS:		
India rubber boots.....*pairs*	300	$938
India rubber shoes.....*pairs*	4,011	4,134
Automobile tires	.....	1,602
Other rubber tires.....	.....	469
Belting, hose and packing...	.....	1,946
All other manufactures of india rubber	.....	1,268
Total	.....	$10,357

PORTS OF SEATTLE AND TACOMA, WASH.—DECEMBER, 1917.

IMPORTS:	Pounds.	Value.
India rubber	5,506,025	$2,664,106
Gutta jelutong (Pontianak).	50,960	16,435
Gutta siak	56,751	6,404
Total	5,613,736	$2,686,945
EXPORTS:		
India rubber boots.....*pairs*	893	$2,561
India rubber shoes.....*pairs*	17,203	14,327
Automobile tires	.....	45,192
Other rubber tires.....	.....	5,345
Belting, hose and packing..	.....	35,526
All other manufactures of india rubber	.....	17,810
Total	.....	$120,761

CRUDE RUBBER ARRIVALS AT PACIFIC COAST AS REPORTED.

PLANTATIONS.

	Pounds.
NOVEMBER 26.—By the *Senator*=Far East:	
Fred. Stern & Co.....	17,920
NOVEMBER 27.—By the *Santa Cruz*=Colombo:	
F. R. Henderson & Co.....	191,230
NOVEMBER 30.—By the *Burma Maru*=Singapore:	
F. R. Henderson & Co.....	725,200
Fred. Stern & Co.....	60,480
DECEMBER 8.—By the *Nippon Maru*=Hongkong:	
F. R. Henderson & Co.....	142,660
DECEMBER 10.—By the *Bintang*=Soerabaia:	
Fred. Stern & Co.....	49,280
DECEMBER 17.—By the *Buyo Maru*=Far East:	
Fred. Stern & Co.....	112,000
F. R. Henderson & Co.....	80,300
W. R. Grace & Co.....	30,176
DECEMBER 19.—By the *Elpenor*=Far East:	
Fred Stern & Co.....	78,400
F. R. Henderson & Co.....	590,670
W. R. Grace & Co.....	2,249
DECEMBER 21.—By the *Kotsu Maru*=Singapore:	
General Rubber Co.....2,830,000	
W. R. Grace & Co.....	109,776
Fred. Stern & Co.....	47,040
DECEMBER 21.—By the *Unkai Maru*=Singapore:	
J. T. Johnstone & Co.....	35,840
DECEMBER 21.—By the *Rembrandt*=Batavia:	
General Rubber Co.....	454,000
Meyer & Brown.....	122,100
DECEMBER 24.—By the *Celsus*=Far East:	
Rubber Trading Co.....	11,200
DECEMBER 24.—By the *Chicago Maru*=Far East:	
Rubber Trading Co.....	13,440
DECEMBER 24.—By the *Vondel*=Batavia:	
Rubber Trading Co.....	44,800
JANUARY 1.—By the *Selandia*=Batavia:	
General Rubber Co.....	660,800
F. R. Henderson & Co.....	226,200
JANUARY 2.—By the *Ecuador*=Colombo:	
J. T. Johnstone & Co.....	15,700
W. R. Grace & Co.....	31,360
Meyer & Brown.....	11,200
JANUARY 2.—By the *Goentoer*=Batavia:	
Meyer & Brown	44,800
JANUARY 6.—By the *Tempaisan Maru*=Singapore:	
Meyer & Brown.....	20,200
W. R. Grace & Co.....	56,160
JANUARY 7.—By the *Thordis*=Singapore:	
General Rubber Co.....	660,800
Meyer & Brown	6,700
W. R. Grace & Co.....	197,994
Fred. Stern & Co.....	112,000
JANUARY 7.—By the *Van Cloon*=Batavia:	
General Rubber Co.....	396,800
Meyer & Brown.....	163,500
JANUARY 8.—By the *Koan Maru*=Singapore:	
General Rubber Co.....	560,000
Meyer & Brown.....	458,100
Fred. Stern & Co.....	201,600
JANUARY 10.—By the *Protesilaus*=Hongkong:	
W. R. Grace & Co.....	33,600
JANUARY 14.—By the *Rindjani*=Batavia:	
Meyer & Brown.....	53,800
JANUARY 14.—By the *Korea Maru*=Far East:	
Meyer & Brown.....	4,500

NO DATES GIVEN.

By the *Hudson Maru*=Far East:	
F. R. Henderson & Co.....	182,000
By the *Mexico Maru*=Far East:	
Fred. Stern & Co.....	22,400
By the *Sachsen*=Far East:	
Fred. Stern & Co.....	129,920
By the *Tenyo Maru*=Far East:	
Fred. Stern & Co.....	67,200
By the *Capto*=Far East:	
Fred. Stern & Co.....	291,200

STATISTICS OF CRUDE AND MANUFACTURED RUBBER AT THE PORT OF NEW YORK.

IMPORTS.

UNMANUFACTURED—*free:*	November, 1917. Pounds.	Value.
Crude rubber:		
From—		
France	2,307	$2,014
Portugal	34,833	20,900
England	975,754	511,928
Canada	38,080	25,825
Costa Rica	4,524	2,240
Guatemala	5,401	1,092
Honduras	96	36
Nicaragua	27,519	11,740
Panama	14,343	5,341
Salvador	5,232	1,674
Mexico	67,979	22,930
Trinidad	2,128	927
San Domingo	4,839	3,544
Brazil	1,680,088	590,726
Colombia	29,798	11,549
Ecuador	147,455	57,780
British Guiana	21,770	15,239
Dutch Guiana	43	25
Peru	174,393	81,810
Venezuela	19,769	11,201
British India	116,380	60,168
Straits Settlements	10,540,020	5,637,356
British East Indies	1,689,096	1,025,431
Dutch East Indies	417,966	238,471
New Zealand	6,855	3,324
British Oceanica	682	440
Philippine Islands	23,211	10,314
British West Africa	23,840	7,591
Totals	16,074,401	$8,361,616
Gutta percha:		
From—		
Straits Settlements	22,560	$3,086
Gutta jelutong:		
From—		
Straits Settlements	445,169	$34,676
Japan	32,421	2,846
Totals	477,590	$37,522
Balata:		
From—		
Panama	106,502	$39,123
Colombia	21,136	7,054
Dutch Guiana	22,510	17,065
Totals	150,148	$63,242
Rubber scrap:		
From—		
France	$17,497	$36,934
England	1,089,377	66,263
Canada	6,766	1,522
Panama	4,050	194
Jamaica	2,610	148
Cuba	44,793	2,678
San Domingo	407	8
Totals	1,665,500	$107,747
Totals, unmanufactured	18,390,199	$8,573,213

MANUFACTURED—*dutiable:*	November, 1917. Pounds.	Value.
India rubber:		
From—		
France		$227
Spain		660
England		15,267
Canada		906
Brazil		4
Straits Settlements		4,510
Japan		4,164
Total		$25,738
Gutta percha:		
From—		
Scotland		$226
Canada		150
Total		$376
Total, manufactured		$26,114

EXPORTS OF DOMESTIC MERCHANDISE.

MANUFACTURED—	November, 1917. Pounds.	Value.
Automobile tires:		
To—		
France		$58,876
England		112,338
Panama		21,100
Mexico		37,033
Jamaica		11,864
Cuba		138,742
Argentina		117,772
Brazil		30,307
Chile		14,300
Peru		5,227
Uruguay		17,016
Venezuela		7,065
British India		12,788
Dutch East Indies		77,052
Australia		29,770
New Zealand		65,670
British South Africa		25,478
Other countries		38,467
Total		$820,865
All other tires		$150,351
Scrap rubber	32,098	7,561
Reclaimed rubber	6,117	1,300
Belting, hose and packing		599,119
Rubber boots.....*pairs*	245,201	744,033
Rubber shoes.....*pairs*	66,848	39,285
Druggists' sundries		$99,104
All other manufactures of india rubber		$465,707
Total		$2,927,325

EXPORTS OF FOREIGN MERCHANDISE.

UNMANUFACTURED—	November, 1917. Pounds.	Value.
Gutta percha	32,590	$8,148
India rubber:		
To—		
England	20	$15
Cuba	22,330	11,536
Australia	41,428	29,400
Totals	63,778	$40,951

RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

UNMANUFACTURED—*free:*	October, 1917. Pounds.	Value.
India rubber:		
From—		
France	49,860	$30,013
Portugal	62,976	35,206
United Kingdom	2,225,940	1,241,771
Central America	57,145	24,290
Mexico	42,199	23,546
Brazil	2,866,072	850,875
Peru	697,958	278,134
Other South America	93,109	44,432
British East Indies	21,463,540	12,762,499
Dutch East Indies	5,572,930	3,208,450
Other countries	133,493	86,050
Totals	33,265,222	$18,585,266
Balata	309,284	$158,646
Guayule gum	313,067	93,839
Gutta jelutong	2,293,059	113,699
Gutta percha	79,992	21,172
Totals	36,260,624	$18,972,622
Rubber scrap	1,064,817	$72,352
Totals, unmanufactured	37,325,441	$19,044,974
Chicle.....*dutiable*	207,869	$102,300
MANUFACTURED—*dutiable:*		
Manufactures of india rubber and gutta percha		$47,656
India rubber substitutes		7,398

EXPORTS OF DOMESTIC MERCHANDISE.

MANUFACTURED—	October, 1917. Pounds.	Value.
Automobile tires:		
To—		
France		$4,832
Russia in Europe		70,494
United Kingdom		242,045
Canada		151,200
Mexico		43,631
Cuba		216,538
Argentina		295,857
Brazil		9,702
British India		14,012
Dutch East Indies		19,033
Australia		21,315
New Zealand		64,464
Philippine Islands		17,755
British South Africa		26,637
Other countries		200,654
Total		$1,398,169
All other tires		$95,189
Scrap and old rubber	125,728	25,682
Reclaimed rubber	369,250	57,452
Belting, hose and packing		343,962
Rubber boots.....*pairs*	309,269	928,245
Rubber shoes.....*pairs*	83,799	57,500
Druggists' sundries		66,092
All other manufactures of rubber		621,486
Total, manufactured		$3,593,777
Fountain pens.....*number*	15,749	$13,313

QUARTERLY STATISTICS OF RUBBER FOR THE UNITED STATES.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	July 1 to Sept. 30, 1916. Pounds.	Value.	Oct. 1 to Dec. 31, 1916. Pounds.	Value.	Jan. 1 to March 1, 1917. Pounds.	Value.	April 1 to June 30, 1917. Pounds.	Value.
Unmanufactured—								
Balata, crude.....free	582,273	$271,531	914,936	$494,733	839,789	$292,560	947,535	$489,082
Guayule, gum.....free	599,229	160,310	619,102	146,481	423,902	116,596	1,230,139	341,097
Gutta jelutong.....10 per cent	6,901,834	302,532	3,304,573	173,664	5,287,600	230,614	8,243,997	351,767
Gutta percha, crude.....free	1,027,055	144,376	249,830	26,735	406,606	30,010	361,232	154,451
India rubber, crude.....free	51,612,637	28,387,499	67,132,667	35,144,433	93,787,569	53,135,663	120,378,575	73,534,309
Rubber scrap.....free	2,571,212	174,091	4,297,098	290,928	5,028,439	298,090	5,768,654	424,004
Rubber, reclaimed.....free	255,889	37,932	486,815	59,064	1,066,220	151,482	1,028,306	159,267
Substitutes, n. e. s., crude.....10 per cent	.....	.....	.....	.....	.....	.....	2,550	879
Totals, unmanufactured	63,550,129	$29,478,271	77,005,021	$36,336,038	106,840,125	$54,355,015	137,960,988	$75,454,856
Manufactured—*dutiable:*								
Gutta percha.....10 per cent	.....	$105,218	.....	$21,437	.....	$20,016	.....	$20,026
India rubber.....10 per cent	.....	105,380	.....	93,642	.....	133,324	.....	219,838
Druggists' sundries.....15 per cent	.....	8,947	.....	11,597	.....	15,753	.....	25,344
Druggists' sundries (reciprocity treaty with Cuba).....15-20 per cent	.....	.....	.....	.....	.....	24	.....	.....
Hard rubber.....25 per cent	.....	3,837	.....	772	.....	353	.....	1,424
Substitutes.....15 per cent	.....	8,788	.....	2,782	.....	975	.....	113,377
Totals, manufactured	.....	$232,170	.....	$130,230	.....	$170,445	.....	$380,009
Chicle, crude.....15 per cent	1,268,544	$432,923	1,049,415	$356,423	931,288	$324,284	1,175,772	$352,243
Chicle, crude (reciprocity treaty with Cuba), 15 cents per lb.....20 per cent	.....	.....	10,130	2,044	.....	.....	.....	.....
Chicle, refined.....20 cents per lb.	866,945	504,293	908,963	548,580	1,056,875	644,434	1,102,310	674,527
Totals, chicle	2,135,489	$937,216	1,968,508	$907,047	1,988,163	$968,718	2,278,082	$1,026,770

EXPORTS OF FOREIGN MERCHANDISE.

UNMANUFACTURED—	October, 1917. Pounds.	Value.
Balata	.....	.....
Gutta jelutong	.....	.....
Gutta percha	21,105	$5,400
India rubber	412,869	251,782
Rubber scrap and refuse	.....	.....
Totals, unmanufactured	433,974	$257,182
MANUFACTURED—		
Gutta percha	.....	$48
India rubber	.....	419
Total, manufactured	.....	$467

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

MANUFACTURED—	October, 1917. Pounds.	Value.
To—		
Alaska:		
Belting, hose and packing	.....	$7,629
Boots and shoes.....*pairs*	5,903	12,041
Other rubber goods	.....	6,725
Total	.....	$26,395
To—		
Hawaii:		
Belting, hose and packing	.....	$4,342
Automobile tires	.....	82,467
Other tires	.....	5,928
Other rubber goods	.....	21,024
Total	.....	$113,761
To—		
Philippine Islands:		
Belting, hose and packing	.....	$5,014
Boots and shoes.....*pairs*	14,717	9,049
Tires	.....	22,939
Other rubber goods	.....	3,383
Total	.....	$40,385
To—		
Porto Rico:		
Belting, hose and packing	.....	$7,049
Automobile tires	.....	103,739
Other tires	.....	3,606
Other rubber goods	.....	16,181
Total	.....	$130,575

RUBBER STATISTICS FOR THE DOMINION OF CANADA.

The import and export figures by countries usually published in this table are withheld by the Canadian Government.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

UNMANUFACTURED—*free:*	October, 1917. Pounds.	Value.
Rubber and gutta percha, crude caoutchouc or india rubber	1,242,817	$707,345
Rubber, recovered	424,204	69,602
Hard rubber, in sheets and rods	1,649	1,378
Rubber substitute	38,156	3,669
Rubber, powdered, and rubber or gutta percha waste	146,448	7,971
Rubber thread, not covered	2,459	3,574
Chicle	104,122	42,047
MANUFACTURED—*dutiable:*	General Tariff. Value.	Preferential Tariff. Value.
Boots and shoes	$42,439	$4,588
Belting	10,871	.....
Waterproof clothing	12,396	17,063
Hose lined with rubber	8,874	.....
Mats and matting	68	.....
Packing	7,352	325
Tires of rubber for all vehicles	160,983	843
Rubber cement and all manufactures of india rubber and gutta percha—N. O. P.	75,354	7,851
Hard rubber, unfinished, in tubes for fountain pens	1,228	.....
Webbing—over one inch wide	18,125	936

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

MANUFACTURED—	October, 1917. Produce of Canada. Value.	Reexports of Foreign Goods. Value.
Hose	$18,087	.....
Boots and shoes	69,736	$1,307
Waterproof clothing	911	41
Tires	109,299	3,325
Waste	14,996	.....
All other N. O. P.	7,493	2,342
Chicle	23,011	555

LONDON AND LIVERPOOL RUBBER STATISTICS.

The import and export figures by countries usually published in this table are withheld by the British Government.

IMPORTS.

UNMANUFACTURED—	November, 1917. Pounds.	£
Crude rubber:		
At—		
London	3,531,100	437,931
Liverpool	7,870,000	1,066,308
Totals	11,401,100	1,504,239
Waste and reclaimed rubber:		
At—		
London	8,500	109
Liverpool	147,900	916
Totals	156,400	1,025

EXPORTS.

Waste and reclaimed rubber:		
From—		
London	688,900	14,299
Liverpool	44,500	420
Totals	733,400	14,719

REEXPORTS.

Crude rubber:		
From—		
London	2,532,900	331,888
Liverpool	1,853,200	233,675
Totals	4,386,100	565,563
Waste and reclaimed rubber:		
From—		
London	5,600	352

UNITED KINGDOM RUBBER STATISTICS.

The import and export figures by countries usually published in this table are withheld by the British Government.

IMPORTS.

UNMANUFACTURED—	November, 1917. Pounds.	£.
Crude rubber	13,099,000	1,688,677
Waste and reclaimed rubber	166,000	1,206
Gutta percha	1,179,360	164,678
Totals	14,444,360	1,854,561
MANUFACTURED—		
Apparel, waterproofed	.....	3,840
Boots and shoes...*doz. pairs*	6,947	22,891
Insulated wire	.....	786
Automobile tires and tubes	.....	145,088
Motorcycle tires and tubes	.....	1,960
Cycle tires and tubes	.....	1,107
Tires not specified	.....	330
Total	.....	176,002

EXPORTS.

UNMANUFACTURED—	November, 1917. Pounds.	£.
Waste and reclaimed rubber	1,230,600	22,629
MANUFACTURED—		
Apparel, waterproofed	.....	46,981
Boots and shoes...*doz. pairs*	14,387	16,197
Insulated wire	.....	4,797
Automobile tires and tubes	.....	83,083
Motorcycle tires and tubes	.....	11,646
Cycle tires and tubes	.....	13,736
Tires not specified	.....	11,030
Manufactures not specified	.....	148,922
Total	.....	336,392

EXPORTS—FOREIGN AND COLONIAL.

UNMANUFACTURED—	November, 1917. Pounds.	£.
Crude rubber	4,510,800	578,629
Waste and reclaimed rubber	5,600	352
Gutta percha	18,480	3,626
Totals	4,534,880	582,607
MANUFACTURED—		
Apparel, waterproofed	.....	12
Boots and shoes...*doz. pairs*	35	118
Insulated wire	.....	100
Automobile tires and tubes	.....	12,996
Motorcycle tires and tubes	.....	71
Tires not specified	.....	8
Total	.....	13,305

RUBBER STATISTICS FOR ITALY.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

UNMANUFACTURED—	Nine Months Ending September, 1917. Pounds.	Lire.
India rubber and gutta percha —raw and reclaimed:		
From—		
Great Britain	1,883,420	.....
Straits Settlements	1,276,000	.....
French West African Colonies	255,640	.....
Belgian Congo	234,300	.....
Brazil	3,907,200	.....
Other countries	3,158,760	.....
Totals	10,715,320	43,835,400
Rubber scrap	1,741,300	791,500
MANUFACTURED—		
India rubber and gutta percha —threads:		
From—		
Great Britain	20,900	.....
United States	51,480	.....
Other countries	2,640	.....
Totals	75,020	682,000
India rubber and gutta percha —sheets:		
Cut sheet	1,100	8,750
Elastic fabric	1,320	3,000
Hard rubber	22,220	87,870
India rubber and gutta percha —tubes:		
From cut sheet	220	1,850
Elastic fabric	11,000	35,000
Other forms	1,320	4,800
Belting	80,520	292,800
Rubber coated fabrics..*pieces*	71,060	331,075
Other forms:		
From—		
Great Britain	9,680	.....
Other countries	25,080	.....
Totals	34,760	205,400
Boots and shoes—*pairs:*		
From—		
France	6,046	.....
United States	19,023	.....
Other countries	169	.....
Totals	25,238	164,047
Elastic webbing:		
From—		
France	33,880	.....
Great Britain	11,880	.....
Other countries	5,720	.....
Totals	51,480	397,800
Clothing and articles for travel	1,540	16,800
Articles not specified:		
From cut sheet	11,440	118,800
Elastic fabric:		
From—		
France	56,760	.....
Great Britain	153,340	.....
Other countries	11,440	.....
Totals	221,540	956,650
Tires and tubes:		
From—		
France	691,240	.....
Great Britain	383,020	.....
Other countries	23,320	.....
Totals	1,097,580	7,782,840
Other rubber manufactures:		
From—		
France	174,680	.....
Great Britain	329,120	.....
United States	476,960	.....
Other countries	1,100	.....
Totals	981,860	3,570,400
Total Imports	.....	59,282,382

EXPORTS OF CRUDE AND MANUFACTURED RUBBER.

UNMANUFACTURED—	Nine Months Ending September, 1917. Pounds.	Lire.
India rubber and gutta-percha —raw and reclaimed:		
To—		
Spain	340,560	.....
United States	554,400	.....
Totals	894,960	1,220,400
MANUFACTURED—		
India rubber and gutta percha —threads:		
To—		
France	17,820	.....
Great Britain	7,040	.....
Spain	12,760	.....
Switzerland	4,620	.....
Argentina	3,740	.....
Other countries	1,980	.....
Totals	47,960	414,200
India rubber and gutta percha —sheets:		
Cut sheets	1,320	10,200
Elastic fabric	5,500	15,000
Insulated wire	440	700
Hard rubber	19,810	68,850
MANUFACTURED—	Nine Months Ending September, 1917. Pounds.	Lire.
India rubber and gutta percha —tubes:		
From cut sheet	1,320	68,850
Elastic fabric	43,340	11,400
Other forms	58,520	128,050
Belting	2,640	8,640
Rubber coated fabric..*pieces*	36,960	168,000
Elastic webbing:		
To—		
France	4,620	.....
Greece	18,700	.....
Spain	18,700	.....
Switzerland	73,920	.....
Egypt	12,320	.....
Argentina	51,480	.....
Brazil	113,960	.....
Chile	11,660	.....
Cuba	12,980	.....
Other countries	29,700	.....
Totals	348,040	2,531,200
Clothing and articles for travel	7,260	75,900
Articles not specified:		
From cut sheet:		
To—		
Great Britain	660	.....
Spain	1,100	.....
Argentina	7,480	.....
Uruguay	1,980	.....
Other countries	1,100	.....
Totals	12,320	112,000
Elastic fabric	22,440	91,800
MANUFACTURED—	Nine Months Ending September, 1917. Pounds.	Lire.
Tires and tubes:		
To—		
France	$22,060	.....
Great Britain	1,514,260	.....
Switzerland	1,980	.....
India and Ceylon	369,380	.....
Australia	440	.....
Argentina	211,420	.....
Brazil	239,580	.....
Other countries	641,300	.....
Totals	3,500,420	16,467,885
Other rubber manufactures:		
To—		
France	42,460	.....
Great Britain	36,740	.....
Spain	6,160	.....
Switzerland	33,880	.....
Egypt	3,300	.....
Argentina	86,240	.....
Brazil	33,880	.....
Uruguay	15,620	.....
Other countries	30,580	.....
Totals	288,860	1,181,700
Total Exports	.....	22,705,425

The nominal value of a lira is $0.193.

THE MARKET FOR RUBBER SCRAP.

Copyright, 1918.

NEW YORK.

THE rubber scrap market recovered very slowly from the holiday depression and inventory time peculiar to the first part of January. While the buying was not heavy, and undoubtedly intended for immediate requirements, the undertone has remained firm for the greater part of the month. This was due to the belief that the mills are short of supplies as indicated by the absence of general market activity for several months. However, the improvement in the market was perceptibly checked when the Government's factory closing orders went into effect and, together with the railroad embargoes that followed, greatly depressed the market. During the closing week there was little market interest shown by the manufacturers, and dealers were inclined to hold on rather than sell. Conditions were quiet and the undertone firm.

BOOTS AND SHOES. Fair-sized lots have been moved among dealers at firm prices during the month, but reclaimers' business has usually been of a limited character. Inquiries from this source have been frequent, particularly during the last of the month; closing prices are firm and about ⅛ cent higher than a month ago.

TIRES. Tire business has been very quiet and reported transactions were small. Values have not undergone any change and the general situation may be termed dull. Solid tires appear to have received the most attention during the month.

INNER TUBES. The situation in this material has continued unchanged and prices remain the same as last month.

MECHANICALS. The volume of business transacted in mechanical scrap has been small and values are unchanged.

STATISTICS. The London and Liverpool imports of waste and reclaimed rubber for November were 156,400 pounds, value £1,025 compared with 137,900 pounds, value £4,170, for October. Exports of waste and reclaimed rubber for November were 733,000 pounds, value £14,719, compared with 905,100 pounds, value £20,179, for October.

NEW YORK QUOTATIONS FOR CARLOAD LOTS DELIVERED.

JANUARY 29, 1918.

Prices subject to change without notice.

	Per Pound.	
Boots and shoes	$0.09¼@$0.09¼	
Trimmed arctics	.07¼@	.07¼
Untrimmed arctics	.06¼@	.06¾
White tires, Goodrich and Goodyear	.05¾@	
Auto tires, standard white	.05½@	.05¾
standard mixed	.05¾@	.05½
stripped, unguaranteed	.04½@	
Auto peelings, No. 1	.09¼@	.09½
No. 2	.07 @	.07¼
Inner tubes, No. 1, old packing	.22 @	.22½
new packing	.24 @	.24½
No. 2	.11 @	.11½
red	.11 @	.11½
Irony tires	.01½@	.02
Bicycle tires	.04½@	.04¾
Solid tires	.05½@	.05¾
Clean truck tires	.06 @	.06½
White scrap, No. 1	.12 @	.13
No. 2	.09½@	.10
Red scrap, No. 1	.08½@	.09
No. 2	.07 @	.07½
Mixed black scrap, No. 1	.05 @	.05½
No. 2	.04 @	.04¼
Rubber car springs	.04¼@	.05
Horse shoe pads	.04½@	.04¾
Matting and packings	.01½@	.01¾
Garden hose	.02 @	.02½
Air brake hose	.06 @	
Cotton fire hose	.02¼@	
Lagge hose	.02 @	.02½
Hard rubber scrap, No. 1, bright fracture	.26 @	.27
Battery jars (black compound)	.02½@	.02¾
Insulated wire stripping, free from fiber	.04 @	
Rubber heels	.04 @	.04¼

THE MARKET FOR COTTON AND OTHER FABRICS.

Copyright, 1918

NEW YORK.

AMERICAN cotton established new high records last month as the result of trade demand, a strong southern spot market, and peace talk. On January 9, middling spot was quoted 33.3 cents, March 31.91 cents and May deliveries 31.54 cents. Following the fuel administrator's closing order, the market was deluged with selling orders and prices slumped accordingly. This was succeeded by a period of uncertainty and sharp fluctuations, but confidence soon resulted in a resumption of trade buying, the market recovered and prices advanced. On January 26 middling spot was quoted 31.6 cents, and March and May futures 30.35 and 29.85 cents, respectively.

The Census Bureau in a recent report placed the amount of cotton ginned from the growth of the crop of 1917 to January

16, 1918, at 10,569,475 bales, counting round as half bales, compared with 11,137,712 bales in 1917 and 10,751,990 bales in 1916. The number of round bales included this year is 185,972 bales, contrasted with 189,004 bales in 1917 and 106,968 bales in 1916.

The correct total of the quantity of cotton ginned this season prior to January 1 is 10,438,488 bales.

EGYPTIAN COTTON. The Alexandria Cotton Co., Limited, Boston, Massachusetts, reports the following by mail from Alexandria, dated December 30, 1917:

The futures market has again been very firm despite the accumulation of stocks, the restrictions on exports, and an assured big crop. The demand for Sakellarides is not in proportion to the demand for Upper Egypt, and values have remained about the same, in spite of the advance in the contract market.

The order by the military authorities prohibiting the export of cotton from Egypt except under license has had only a temporary effect on values, as it is realized that the object of this prohibition was to distribute the Egyptian cotton crop in the interests of the Allies.

Shipping facilities have been satisfactory, and, for the first time during this season, European exports of the week amount to about 20,000 bales. The extent of the freight facilities which will be granted during December will have a potent influence on the course of the market.

As regards the 1917 crop, it may be said that the attack of the pink boll worm has been as severe as that of the year 1916, the reason for the better yields obtained being the strength of the plant and the favorable weather during August and September which produced earlier and more abundant bolls.

SEA ISLAND COTTON. John Malloch & Co., Savannah, Georgia, report as follows:

TIRE
FABRICS

JENCKES
SPINNING
COMPANY

PAWTUCKET
RHODE ISLAND

There was a fair inquiry during the last week of January, but no business resulted. Holders still refuse to make concessions, so asking and selling prices are far apart. In all sections it is still impossible to buy graded lots. Owners want to sell round lots, and will make a price for all grades only. Receipts show no improvement in quality; the majority being extra fine and lower.

According to the Census Bureau's report, 88,747 bales of Sea Island cotton were ginned from the growth of the crop to January 16, 1918, compared with 115,592 bales in 1917 and 90,671 bales in 1916. The distribution of the 1918 crop by states is: Florida, 36,862 bales; Georgia, 45,651 bales; South Carolina, 6,234 bales.

MECHANICAL DUCK. There has been no change in the acute conditions controlling this market. Deliveries after January 1 will be materially reduced, owing to the factory closing orders and country-wide freight embargoes. Prices have advanced 5 cents a pound during the past month.

RAINCOAT FABRICS. The cotton cloth trade is expectantly awaiting the new government specifications for slicker contracts, the anxiety being caused by the belief that the new will differ materially from the old specifications. It is believed in some quarters that 64 by 60 bombazine will be continued, as this material is about the only cloth available in the enormous quantities required.

The difficulty of obtaining woolen fabrics, especially wool mixed goods for rubberizing, is very acute. There is a shortage of woven linings and the mills are averse to new contracts. Government orders have been large, while civilian business has been moderate.

SHEETINGS, OSNABURGS AND DRILLS. Supplies continue difficult to obtain, as the Government is absorbing a large part of the production. The mills are all oversold, and in many instances refuse to consider new contracts. Prices have advanced on all grades.

TIRE FABRICS. Very little change has been noted during the past month in this market, that has been generally quiet. The consuming trade has been slow in anticipating next year's tire fabric requirements and a positive shortage is in sight as more than half of the looms are occupied with Government orders.

NEW YORK QUOTATIONS.
JANUARY 29, 1918.
Prices subject to change without notice.

Airplane and Balloon Fabrics:			
Wamsutta, S. A. I. L. No. 1, 40-inch	*yard*	.57 @	
No. 4, 38½-inch		.45 @	
for gas masks		.43½ @	
Wool Stockinettes—52-inch:			
A—14-ounce	*yard*	*1.75 @	
B—14-ounce		*2.25 @	
C—14-ounce		*2.50 @	
Cotton Stockinettes—52-inch:			
D—14-ounce	*yard*	*.85 @	.90
E—11½-ounce		*.60 @	.65
F—14-ounce		*.85 @	.90
G— 8-ounce		*.75 @	.80
H—11-ounce		*.70 @	.85
I— 9-ounce		*.60 @	.65
Colors—white, black, blue, brown.			
Knitaback Stockinette	*pound*	*1.60 @	1.65
Tire Fabrics:			
17¼-ounce Sea Island, combed	*square yard*	1.75 @	1.80
17¼-ounce Egyptian, combed		1.25 @	1.30
17¼-ounce Egyptian, carded		1.20 @	1.25
17¼-ounce Peelers, combed		1.10 @	1.15
17¼-ounce Peelers, carded		.85 @	.90
Sheetings:			
40-inch 2.35-yard	*yard*	*.25 @	
40-inch 2.50-yard		*.23½ @	
40-inch 2.70-yard		*.22 @	
40-inch 2.85-yard		*.20½ @	
40-inch 3.15-yard		*.19½ @	
Osnaburgs:			
40-inch 2.35-yard	*yard*	*.23½ @	
40-inch 2.48-yard		*.21½ @	
37½-inch 2.42-yard		*.22 @	
Mechanical Ducks:			
Hose	*pound*	*.65 @	.70
Belting		*.65 @	.70
Carriage Cloth Duck:			
38-inch 2.00-yard enameling duck	*yard*	*.27 @	
38-inch 1.74-yard		*.31 @	
72-inch 16.66-ounce		*.59 @	
72-inch 17.21-ounce		*.64 @	

Drills:			
38-inch 2.00-yard	yard	*.27	@
48-inch 2.47-yard		*.22½	@
52-inch 1.90-yard		*.29	@
52-inch 1.95-yard		*.28½	@
60-inch 1.52-yard		*.37	@
Imported Woolen Fabrics Specially Prepared for Rubberizing—Plain and Fancies:			
63-inch, 3¼ to 7½ ounces	yard	.85	@ 2.25
36-inch, 2¾ to 5 ounces		.55	@ 1.30
Imported Plaid Lining (Union and Cotton):			
63-inch, 2 to 4 ounces	yard	.65	@ 1.25
36-inch, 2 to 4 ounces		.45	@ .95
Domestic Worsted Fabrics:			
36-inch, 4½ to 8 ounces	yard	.47½	@ 1.25
Domestic Woven Plain Linings (Cotton):			
36-inch, 3¼ to 5 ounces	yard	.16	@ .30
Raincoat Cloth (Cotton):			
Bombazine 64 x 60 water repellent	yard	.17	@
60 x 48 not water repellent		.13¾	@
Twills 64 x 72		.18	@ .25
64 x 102		.25	@ .30
Tweed		.35	@ .40
Tweed, printed		.20	@ .22
Plaids 60 x 48		.14¼	@
56 x 44		.13¾	@
Surface prints 60 x 48		.15½	@
64 x 60		.17¼	@
Repp		.25	@ .32
Burlaps:			
32— 7½-ounce	100 yards	None	
40— 7½-ounce		17.00	@
40— 8-ounce		17.20	@
40—10-ounce		21.00	@
40—10½-ounce		21.75	@
45— 7½-ounce		18.95	@
45— 8-ounce		19.20	@
45— 9½-ounce		24.75	@
48—10-ounce		25.00	@

*Nominal.

SEA ISLAND COTTON CROP MOVEMENT.

FROM AUGUST 1, 1917, TO DECEMBER 28, 1917.

	Receipts. 1917-18.	1916-17.
Stock on hand, August 1, 1917—		
Savannah, 1043; Charleston, 1...bales	1,044	2,508
Received at Savannah (gross)	20,670	37,150
Received at Charleston	4,704	2,586
Received at Jacksonville	17,579	27,701
Totals	43,997	69,945
Less exports	*27,028	58,724
Stock December 28, 1917—		
Savannah, 13,895; Charleston, 3,074	16,969	11,221
Crop in sight at all ports to date	42,887	67,377

EXPORTS

	To					
From—	Great Britain.	Continent.	Northern Mills.	Southern Mills.	Charleston.	Total.
Savannah...bales	28	142	5,978	1,655	15	7,818
Charleston	.....	.....	1,631	.....	.....	1,631
Jacksonville	.....	.....	17,579	.....	.....	17,579
Totals	28	142	25,188	1,655	15	*27,028
1916-17	889	120	54,343	3,372	.....	58,724
	Dec. 861	Inc. 22	Dec. 29,155	Dec. 1,717	Inc., 15	Dec. 31,696

*In addition to the exports shown above, there has been a very considerable movement from interior points to the southern mills, and to northern mills via Norfolk, but at present it is not possible to form anything like a reliable estimate of the size of this movement.

(Compiled by John Malloch & Co., Savannah, Georgia.)

EGYPTIAN COTTON MOVEMENT.

FROM AUGUST 1, TO NOVEMBER 28:

	1917-1918.	1916-1917.	1915-1916.
Liverpool...bales	71,741	79,307	64,536
Manchester	20,738	40,823	50,907
Total shipments to Great Britain	92,479	120,130	115,443
To—			
France...10,309	11,793	13,263	17,480
Spain...1,484			
Italy	12,272	15,112	12,429
Russia	.....	9,936	16,015
Greece	.....	65	50
Total shipments to Continent	24,065	38,376	45,974
To—			
United States	13,530	29,974	59,837
Japan	9,914	3,010	5,630
Total shipments to all parts	139,988	191,490	226,884
Total crop (interior gross weight), *cantars**	.....	5,126,199	4,726,518

*Cantar equals 98 pounds.

(Compiled by Davies, Benachi & Co., Liverpool.)

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

Copyright, 1918

NEW YORK.

BASE metals have been generally inactive and quiet during January, the only feature being the recommendation of the War Industries Board to continue the 23.5-cent price for copper, until June 1. Severe weather, railroad congestion and embargoes have greatly disturbed the metal market. Lead has not been in demand nor has it been scarce, yet prices were advanced, 7.3 cents being the New York spot market on January 25. Spelter has been in fair demand at slightly advanced prices, the spot market being 8 to 8½ on January 25; antimony has shown some activity due to Government buying during the month, but the market became quiet on January 25, spot prices ranging from 13.82½ to 14¼ cents.

The marked improvement in the demand for rubber chemicals noticeable early in the month was summarily checked by the freight congestion that recently paralyzed trade conditions. The freight situation continues to be acute and consumers are advised to anticipate their requirements. Prices have advanced in many instances and the market undertone is much firmer due to increasing labor, fuel, shipping and general costs.

ACCELERATORS. Annex, Duplex, Paradin, N. C. C. and Vitaminex are new additions to the list of organic accelerators.

BARYTES. Prices have advanced $3 to $5 per ton at the mills, due to the high cost of production. Basofor has been in special demand.

DRY COLORS. Trade has been brisk in all the list with firm prices due to increasing cost of manufacturing.

LEAD PIGMENTS. All grades have been in good demand and in some instances producers have withdrawn from the market on account of fuel conditions. Prices are firm.

RUBBER SUBSTITUTES. A steady demand and continued difficulties in obtaining supplies and making shipments are reported by the manufacturers.

ZINC OXIDE. There has been no change in this market and prices are firm.

NEW YORK QUOTATIONS.

JANUARY 29, 1918.

Subject to change without notice.

Accelerators, Accelerene	lb.	*2.62	@
Annex	lb.	.75	@
Duplex	lb.	1.00	@
Excellerex	lb.	.80	@ .85
Hexamethylene tetramine (powdered)	lb.	1.15	@ 1.25
Paraphenylenediamine	lb.	2.75	@
Tensilite	lb.	*.90	@
Thiocarbanilide	lb.	.50	@
Velocite	lb.	*.85	@
Vitaminex	lb.	.75	@
Acetone (drums)	lb.	.35	@ .36
Acid, acetic, 28 per cent (bbls.)	lb.	.06	@
glacial, 99 per cent (carboys)	lb.	.34	@
cresylic, 97-99 per cent, straw color	gal.	1.10	@
95 per cent, dark	gal.	1.00	@
muriatic, 20 degrees	lb.	.02½	@
nitric, 40 degrees	lb.	.08¼	@
sulphuric, 66 degrees	lb.	.02½	@
Aldehyde ammonia (crystals)	lb.	1.25	@ 1.35
Aluminum flake (carloads, bbls.)	ton	24.00	@29.00
(carloads, sacks)	ton	23.00	@
Ammonia carbonate, powdered	lb.	None	
lumps	lb.	None	
Antimony, crimson, sulphuret of (casks)	lb.	.40	@ .50
crimson, "Magmetco"	lb.	*.30	@
crimson, "Mephisto" (casks)	lb.	*.52	@
Antimony, golden, sulphuret of	lb.	.25	@ .35
golden, "Magmetco"	lb.	*.45	@
golden, "Mephisto" (casks)	lb.	*.28	@
golden, sulphuret, States brand, 16-17 per ct.	lb.	*.28	@
red sulphuret, States brand	lb.	.25	@
vermilion sulphuret	lb.	.55	@

Arsenic, red sulphide	lb.	.45	@	
Asbestine (bags)	ton	22.50	@	25.00
Asbestos (bags)	ton	35.00	@	
Barium, carbonate, precipitated	ton	65.00	@	
Barium sulphide, precipitated	lb.	.07	@	
Barytes, pure white	ton	30.00	@	33.00
off color	ton	20.00	@	23.00
uniform floated	ton	22.00	@	25.00
Basofor	ton	80.00	@	
Benzol, pure	gal.	.35	@	.40
90 per cent.	gal.	.35	@	.40
Beta-naphthol, resublimed	lb.	1.00	@	
Blanc fixe	lb.	.04	@	
Bone ash	lb.	*.06	@	
Bone black, powdered	lb.	*.08	@	
granulated	lb.	*.10	@	
Cadmium tri-sulphate (f. o. b. London)	lb.	*2.68	@	
sulphide, yellow	lb.	*2.15	@	2.20
Cantella gum	lb.	.43	@	
Carbon, bisulphide (drums)	lb.	.06½	@	.07
black (cases)	lb.	.25	@	
tetrachloride (drum)	lb.	.16	@	
Caustic soda, 76 per cent	lb.	.06¾	@	.07
Chalk, precipitated, extra light	lb.	.05	@	.05½
precipitated, heavy	lb.	.04	@	.04½
China clay, domestic (powdered)	ton	*12.00	@	20.00
imported (powdered)	ton	45.00	@	
Chrome, green	lb.	.11½	@	.50
yellow	lb.	.24	@	
Cobalt blue	lb.	.25	@	.35
Cotton linters, clean mill run	lb.	.06¼	@	
Fossil flour	ton	60.00	@	
Gas black (cases)	lb.	.20	@	.30
Gilsonite	ton	50.00	@	60.00
Glue, high grade	lb.	.35	@	.50
medium	lb.	.20	@	.35
low grade	lb.	.16	@	.20
Glycerine, C. P. (drums)	lb.	.70	@	
Graphite, flake (400 pound bbl.)	lb.	.15	@	
amorphous	lb.	.06	@	
Green oxide of chromium (casks)	lb.	.85	@	
Ground glass FF. (bbls.)	lb.	*.02¾	@	
Indian red, reduced grades	lb.	.10	@	
pure bright	lb.	.12	@	
Infusorial earth, powdered	ton	60.00	@	
bolted	ton	65.00	@	
Iron oxide, red, reduced grades	lb.	.04	@	.08
red, pure, bright	lb.	.11	@	.14
brown	lb.	.02	@	.04
Ivory, black	lb.	.16	@	.30
Lampblack	lb.	.12	@	.25
Lead, dry red	lb.	.10	@	
sublimed blue	lb.	.08½	@	
sublimed white	lb.	.08½	@	
white, basic carbonate	lb.	.09	@	
white, basic sulphate	lb.	.08½	@	.09
black hyposulphite (Black Hypo)	lb.	*.50	@	
Lime, flour	lb.	.01½	@	.01¾
Liquid rubber	lb.	*.12½	@	
Litharge, domestic	lb.	.09½	@	.10
English	lb.	.17	@	.18
sublimed	lb.	.09¾	@	
Lithopone, imported	lb.	.10½	@	.12
domestic	lb.	.06	@	.07
Rubber makers' white	lb.	.07	@	
Ponolith	lb.	.06½	@	.07
Magnesium, carbonate	lb.	.10	@	.11
calcined, heavy	lb.	.10½	@	.12
light	lb.	.50	@	.65
Magnesite, calcined, powdered	ton	40.00	@	65.00
Mica, powdered	lb.	.03½	@	.05
Mineral rubber, M. R. X	ton	100.00	@	
Genasco (carloads)	ton	50.00	@	
Pioneer	ton	50.00	@	
Richmond Brand	ton	70.00	@	
No. 64 Brand	ton	50.00	@	
Refined Elaterite	lb.	.05	@	
Raven M. R.	lb.	.02½	@	
Naphtha, motor gasoline (steel bbls.)	gal.	.24	@	
73@76 degrees (steel bbls.)	gal.	.33	@	
68@70 degrees (steel bbls.)	gal.	.28	@	
V. M. & P. (steel bbls.)	gal.	.23	@	
Ochre, brown domestic	lb.	.02	@	.03
imported	lb.	.04	@	.05
yellow	lb.	.04½	@	
Oil, aniline	lb.	.27	@	.38
corn, refined Argo (carloads)	cwt.	22.32	@	
linseed, raw (carloads)	gal.	1.31	@	
palm	lb.	.28	@	.32
paraffin	gal.	*.27	@	.28
pine, steam distilled	gal.	.47	@	
pine tar	gal.	.31	@	
rapeseed, blown	gal.	1.70	@	1.75
rosin	gal.	.37	@	
tar (cases)	gal.	.27	@	.34
soluble aniline, yellow, orange	lb.	2.50	@	
black	lb.	1.25	@	
red	lb.	2.50	@	3.00
Orange mineral, domestic	lb.	.13	@	
Oxymony	lb.	.15	@	
Paragol soft and medium (carloads)	cwt.	15.56	@	
hard	cwt.	15.06	@	
Petrolatum	lb.	.05	@	.12½
Petroleum grease	lb.	*.04½	@	.04¾
Pine tar, retort	bbl.	15.00	@	
kiln	gal.	.27	@	
Pitch, Burgundy	lb.	.04½	@	
coal tar	lb.	.01	@	
pine tar	lb.	.02½	@	
Plaster of Paris	bbl.	2.00	@	3.00
Prussian blue	lb.	.70	@	
Pumice stone, powdered (bbls.)	lb.	.03½	@	
Reclaimed rubber, Standard shoe reclaim	lb.	.16¼	@	
Standard tire reclaim	lb.	17¼	@	.17½
Resin, Pontianak, refined	lb.	None		
granulated	lb.	None		
fused	lb.	None		
Rosin, K	bbl.	7.50	@	
Rotten stone, powdered	lb.	.02½	@	.04½
Rubber black	lb.	.06	@	
Rubber substitute, black	lb.	.11½	@	.18
white	lb.	.13½	@	.24
brown	lb.	.18	@	.24
brown factice	lb.	.09	@	.23
white factice	lb.	.13	@	.25
Rubhide	lb.	*.38	@	
Shellac, fine orange	lb.	.67	@	.68
Sienna, brown	lb.	.04½	@	.12
Silex (silica)	ton	None		
Soapstone, powdered	ton	20.00	@	22.00
Starch, powdered corn (carload, bbls.)	cwt.	5.02	@	
(carload, bags)	cwt.	4.89	@	
Sulphur chloride (drums)	lb.	.06¼	@	.07½
Sulphur, flour, velvet brand (carloads)	cwt.	3.95	@	
pure soft	cwt.	3.95	@	
Talc, American	ton	25.00	@	
French	ton	28.00	@	
Tar, coal	bbl.	*4.25	@	
Toluol, pure	gal.	None		
Tripoli earth, powdered	ton	60.00	@	
bolted	ton	65.00	@	
Turpentine, spirits	gal.	.49½	@	.50
wood	gal.	.44	@	.45
Tyre-lith	ton	85.00	@	
Umber, brown	lb.	.04½	@	.05
Ultramarine blue	lb.	.18	@	.25
Vermilion, English pale, medium, dark	lb.	1.95	@	
Wax, beeswax, white	lb.	.58	@	.60
ceresin, white	lb.	.16	@	.22
carnauba	lb.	.50	@	.68
ozokerite, black	lb.	.55	@	.58
green	lb.	.75	@	.78
montan	lb.	.32	@	.33
paraffin, crude 118/120 m. p. (cases)	lb.	.10½	@	
crude 124/126 m. p. (cases)	lb.	.09½	@	
refined 128/130 m. p. (cases)	lb.	.12½	@	
refined 135/137 m. p. (cases)	lb.	.13½	@	
Whiting, Alba	cwt.	.90	@	1.00
commercial	cwt.	1.30	@	
gilders	cwt.	1.40	@	
Paris, white, American	cwt.	1.50	@	1.75
English cliffstone	cwt.	2.00	@	
Wood pulp XXX.	ton	*35.00	@	
Zinc oxide, American process, horsehead brand (less carload)				
"XX red" f. o. b. factory	lb.	.10½	@	
"Special" f. o. b. factory	lb.	.11	@	
French process, red seal f. o. b. factory	lb.	.13¼	@	
green seal f. o. b. factory	lb.	.13¾	@	
white seal f. o. b. factory	lb.	.14¼	@	
Zinc sulphide, pure	lb.	None		

* Nominal.

INDIA RUBBER WORLD
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CAOUTCHOUC GUTTA-PERCHA

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